INTERMEDIATE DIVISION

OUTLINES OF COURSES FOR EXPERIMENTAL USE

1951

CURRICULUM I:1

REVISED

ONTARIO

ISSUED BY AUTHORITY OF
THE MINISTER OF EDUCATION

1951

INTERMEDIATE DIVISION

GRADES VII, VIII, IX, X

OUTLINES OF COURSES
FOR EXPERIMENTAL USE

CURRICULUM 1:1 REVISED

This booklet replaces Curriculum I:1
which was printed in 1950.

FOREWORD

The *MEMORANDUM RE ESTABLISHMENT OF LOCAL COMMITTEES ON CURRICULUM (Curriculum: 3)*, dated May 15, 1950, gave directions and suggestions to provide for the revision of courses within a local school system by a Coordinating Committee and Teachers' Committees. To assist these Committees in their work, the accompanying circular contains a statement of objectives for the revision of the curriculum in the Intermediate Division, and suggestive outlines of courses of study in the subjects for Grades VII, VIII, IX, and X.

A school board may use the following types of courses under the circumstances stated:

1. Where a Teachers' Committee has completed its work of drawing up a course of study, such course may be used on the recommendation of the Coordinating Committee;

2. After the necessary modifications have been made by Teachers' Committees to suit local conditions, any one or more of the courses outlined in this circular may be used on an experimental basis on the recommendation of the Coordinating Committee;

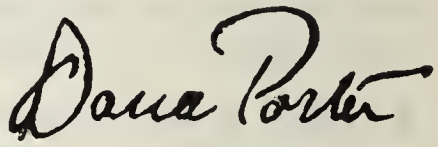
3. Where a Teachers' Committee has not proceeded far enough in its work to recommend its own course or changes in the suggested outlines, the outlines submitted herewith may be used experimentally in a secondary school on the recommendation of the principal or in an elementary school on the recommendation of the elementary school inspector.

Where a school board does not make use of the foregoing permission, the present authorized courses shall be followed.

In the preparation of these outlines, recommendations received from the Ontario Teachers' Federation and the Ontario Educational Association were given consideration. The suggested courses are based on modern educational

thought and practice in Canada and elsewhere. They were prepared by committees of the Ontario School Inspectors' Association comprising inspectors of Elementary and Secondary Schools and representatives from the staffs of the Normal Schools and the Ontario College of Education.

The outlines are not prescriptive, and detailed prescriptive courses will not be issued by the Department of Education. They are designed solely to help Teachers' Committees in drawing up courses of study suited to their particular communities by indicating a general field for study in a given subject, and by providing an example and a basis for discussion.



Minister of Education.

Toronto,
May 1, 1951.

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OBJECTIVES FOR THE REVISION OF THE CURRICULUM IN THE INTERMEDIATE DIVISION

In the revision of the curriculum for the Intermediate Division, the chief aim is to provide a programme for Grades VII, VIII, IX, and X which will be

(a) unified and continuous,
(b) adaptable to the individual differences of pupils ranging in age from 12 to 16 years, and
(c) suited to the needs of the local community.

Unity and Continuity

A recent survey in Ontario indicated that out of all pupils entering the elementary schools approximately 56% continue their education to the end of Grade X, but that only 21% complete Grade XII. Many pupils in Grade IX start four-year courses which they do not finish, and in many cases they drop out of school with a sense of frustration or failure. It is apparent, therefore, that Grade X, instead of Grade VIII, should be recognized as the end of a definite stage in the school education of the majority of pupils.

By grouping Grades VII to X in a single Division of the Curriculum, a unified and continuous programme can be designed for these grades to meet the needs of pupils in the age range of 12 to 16 years and to provide a well-rounded course for pupils who may leave school at the end of Grade X. One of the artificial barriers to continuity has been removed by the abolition of the High School Entrance Examination. The extent to which the programme of the Intermediate Division can be unified and coordinated will depend upon the degree of cooperation between teachers of Grades VII and VIII in the Public and the Separate Schools and teachers of Grades IX and X in the Secondary Schools. In a local school system, it is essential that teachers of one grade be familiar with what is being done in each of the

other grades, and that teachers of one subject know what teachers of other subjects are trying to accomplish. Sharing responsibility for constructing courses of study is an effective means of achieving this objective.

Individual Differences

One of the aims of the school programme is to provide for each individual those activities which are adapted to his particular capacities and in which he may participate with reasonable success and satisfaction.

Pupils in the age group of 12 to 16 years possess a wide range of abilities and interests which must be given opportunities for trial and growth. It is during this adolescent period also that many pupils develop strong vocational interests, and it is important that these pupils find in the school curriculum opportunities to pursue courses related to these interests.

To meet the demands arising from these individual differences, the curriculum of the Intermediate Division should be kept flexible and diversified. In Grades VII and VIII, individual differences may be met through a variety of activities within the common course offered to all pupils. While this principle will apply also to the obligatory subjects of Grades IX and X, further opportunities for meeting individual differences will be afforded in these grades through optional subjects and special courses.

Community Needs

School programmes should be designed to meet the needs of the local community and so to appeal to the immediate interests of the pupils. School and community life should be closely linked, and local situations should be used to illustrate school instruction. The pupil's own community is the best place to get at first hand an understanding of his physical and social environment. Through this understanding of the physical, economic, and social relationships in his own community lies the surest way to his understanding of the wider relationships between the present and the past, and between our country and the rest of the world.

To achieve these objectives, the responsibility for constructing detailed programmes has been placed on local authori-

ties. Local curriculum committees consisting of teachers of Grades VII, VIII, IX, and X are well qualified to assume this responsibiliy. Their ideas arising from daily experience in school will contribute to the practical success of the programme. They will also be able continually to evaluate and revise their courses of study on the basis of actual use and experiment.

Freedom within wide limits to construct courses of study has been used with success in many parts of Ontario. Such programmes, designed to meet local needs, have been effective in holding the interest of pupils, decreasing the number of pupils dropping out of school, and improving the quality of community life. Curriculum planning by local committees of teachers will extend these beneficial results and will enable schools to provide more realistic and interesting courses.

ORGANIZATION OF THE SCHOOL PROGRAMME

The programme of the Intermediate Division should be designed as a unit for pupils of the age range of 12 to 16 years. To meet the needs of these adolescent pupils along the lines suggested in the objectives of the curriculum for the Intermediate Division, the organization of the school programme in this division should include

(a) obligatory subjects,

(b) optional subjects and courses, and

(c) special courses.

Obligatory Subjects

It is recommended that a common general course be offered to all pupils in Grades VII and VIII, with special adaptations to meet individual differences within a class group. In Grades IX and X, part of the programme should consist of obligatory subjects containing the common learnings and experiences which make up a well-rounded general education for pupils of this age-group. The time allotted to these obligatory subjects would be approximately 60% of the total in Grade IX, and 40% in Grade X. The remaining time should be allotted to the optional subjects, but the courses in such subjects should be kept general in character in order that they, too, may contribute to the general education of the pupils selecting them.

Optional Subjects and Courses in Grades IX and X

The number of optional subjects offered will depend upon the facilities of the school, the qualifications of the staff, and the limitations imposed by the maintenance of an economical pupil-teacher ratio. In Vocational and Composite Schools, optional courses as well as optional subjects should be made available in these grades. In order that

pupils may have as wide a choice as possible, even in smaller schools, it is suggested that certain optional subjects be offered on a two-year rotation plan. A course of study in Science, Art, Music, Agriculture, Home Economics, Shop Work, or Commercial Work need not be dependent upon the course of the preceding year in the same subject. The offering of alternate, parallel courses in each of these subjects on a rotation plan will not only simplify time-table organization, but also will enable a pupil to choose the subject in either or both grades. Under this arrangement, some pupils may select in Grade IX the subjects in which they have decided to specialize in the Senior Division, other pupils may explore several subject fields before making a final choice, and pupils who are required to repeat a subject need not repeat the same course content.

Special Courses for pupils who intend to leave school at age 16

Where a sufficient number of pupils indicate their intention of leaving school at the end of Grade X, a school may organize special courses adapted to the needs of such pupils. In addition to appropriate work in English, Social Studies, Elementary Mathematics, and Physical Education, these courses should comprise considerable training in those skills which, together with related information, are basic to homemaking, agriculture, business, or apprenticeship in the industrial trades. Such courses may also contain options in Music (vocal or instrumental), in Art, and in a variety of crafts.

Since these special courses must be organized by local curriculum committees to meet specific needs, they will necessarily vary in subject content. In every case, however, it is important that emphasis be placed on those activities and experiences which will promote desirable attitudes and efficient work habits. Pupils completing such courses should experience a sense of achievement which will enable them to enter employment with confidence and to participate in leisure-time activities with enjoyment.

Grade IX Course for Slow Learners

With the discontinuance of the High School Entrance Examination, the chief principle governing the procedure for pro-

moting pupils from Grade VIII to Grade IX is stated in the *Memorandum re Promotion from Grade VIII and Admission to Grade IX (Curriculum: 2)*, dated March 30, 1950, as follows:

> "The prime consideration which should govern the principal in recommending the promotion of a pupil is whether the best interests of the pupil will be served by his promotion. The principal must decide in the light of his knowledge of the pupil whether it will be better for him to proceed to Grade IX or to remain in Grade VIII."

Since it is realized that the regular courses in Grade IX may be inadequate to meet the needs of some pupils whose best interests will be served by promotion, the *Memorandum* states in paragraph 6, on page 6:

> "It may also be expected that some pupils will enter Grade IX for whom the present courses offered in Grade IX will not be suitable. It will be the duty of the principal and staff of the secondary school to arrange programmes that will meet the needs of these pupils."

The type of special course which may be provided for pupils whose rates of learning fall considerably below average will depend upon (a) the number of such pupils presenting themselves in Grade IX, and (b) the facilities and teaching staff of the secondary school. If the number of pupils is too small to constitute a separate class, such pupils will have to be included as a group in one of the regular Grade IX classes and given a modified programme. If a sufficient number of pupils applies, a separate Grade IX class should be organized with a programme suited to the special needs of the pupils.

In recent years experiments with these special classes have been conducted in a few secondary schools in Ontario. Included in the classes were pupils who had failed in the High School Entrance Examination, and who in some cases had been retarded as much as four years in reading and language work. From these experiments valuable information has been gathered, and certain general conclusions have been drawn. The following data acquired are offered for the purpose of assisting principals in organizing similar programmes:

1. The class makes better progress if it is in charge of a competent home-room teacher who is sensitive to the needs of slow learners, and experienced in ministering to them.

   Special pupils spend approximately half time with a home-room teacher to whom is assigned the work in English, Social Studies, and Mathematics. The home-room teacher is also responsible for individual counselling and guidance, and should be able to administer and interpret the group and individual tests required. Group testing is preceded by informal assessment of the pupils' abilities during the first two weeks of school; individual tests and case studies of certain selected pupils are made later in the term.

   In addition to the qualifications covered by certification, the home-room teacher requires special skill in handling individual pupils or groups who are progressing at varying rates. Experience in elementary schools is found to be invaluable. A Supervisor's or Specialist's Certificate in Auxiliary Education is highly desirable evidence of special interest in the problems of slow learners.

2. In the skill subjects each pupil of the special class is permitted to begin at his achievement level and to proceed at the rate of learning of which he is capable.

   When a slow learner is admitted to a regular Grade IX course in a subject involving reading and number skills, he may find himself on unfamiliar ground where he is unable to respond satisfactorily to the teacher's questions. When instruction is given at or near his level of achievement in reading and number skills, his readiness to answer is likely to be equal to that of pupils in the regular classes.

   It is essential, therefore, that the slow learner receive the type of individual instruction which will permit him to work at his own level and progress at his own rate. This may be accomplished by dividing the class into small teaching groups of four or five pupils having approximately equal abilities in the skill subject being taught. Minor difficulties in spelling, language, reading, or mathematics, which often cause frustration and block progress, are easily detected and overcome in this type of instruction.

3. The number of teachers who instruct a class of slow learners is kept to a minimum.

   These pupils find it difficult to adjust themselves to more than two or three teachers each day; accordingly, the activity subjects of the programme should be restricted in range in order that the number of specialized teachers can be limited to four or five. The optional subjects best suited to this type of pupil have been found to be Science, Typewriting, Shop Work or Home Economics, but in some cases pupils are permitted to substitute other options, such as Art or Music, if they so desire.

4. Wherever possible, special class pupils participate in activities with pupils of the regular classes.

   This may be accomplished by including groups from the special class with the regular classes in Physical Education, or in activity subjects, such as Industrial Arts or Home Economics, Art or Music. Special class pupils are also encouraged to participate in the extra-curricular activities of the school, and wherever a pupil shows a special aptitude in a subject or an activity, he is given the opportunity of gaining the satisfaction which comes from success. Sometimes these pupils excel in subjects for which they have special aptitude.

5. The home-room teacher is provided with adequate teaching materials for the various levels in reading, spelling, language, and mathematics represented in the class. Suitable reference material is also provided for social studies and science.

6. The content of the courses of study in the various subjects is carefully selected.

   The vocabulary of the reading material used is suited to the capacities of the pupils, and exercises are adapted to the achievement level of each of the groups into which the class is divided. In Mathematics remedial work based on diagnostic testing is given as needed, and problems are based on actual life situations. The courses in Social Studies and Science are developed around themes or projects which are closely related to home and community life, in order to stimulate interest in a continuation of these studies. Wherever possible and practicable, subjects are correlated.

Organization of the Time-table

In arranging time-tables, principals of secondary schools and of graded elementary schools will have to make special modifications to suit local conditions and to meet limitations imposed by school facilities, teaching staff, transportation of pupils, or optional subjects and courses. In most cases, a school week of 40 periods, of 40 minutes each, will provide for the best distribution of teaching periods.

In order to reduce the difficulties of transition from Grade VIII to Grade IX and to retain a closer relationship between teacher and pupil in all grades, it is suggested that a number of subjects be assigned to a *home-room* teacher in each grade of the Intermediate Division. For example, the subjects of English, Social Studies, and Mathematics might be assigned to the home-room teacher in Grades VII and VIII, while the other subjects might be divided among teachers who are specially trained in the respective subjects. This grouping would divide the time about equally between the home-room subjects and the specialized subjects. In Grades IX and X, various groupings of subjects might be used to provide for an allotment of 25% to 35% of the total time to the home-room teacher.

Courses and Subjects of Study

Grades VII and VIII

English
Social Studies
Physical Education
Mathematics
Science
Art
Music
Home Economics or Industrial Arts

Grade IX

General Course

Obligatory Subjects

English
Social Studies
Mathematics
Physical Education
Guidance (Occupations)

Options

Any three or four of

Science, French, Latin, Art or Music or Art and Music, Shop Work or Home Economics, Agriculture, Typewriting or Business Practice.

Note 1: A pupil who intends to select in Grade XI a course qualifying him for entrance to university should select French as an option in Grade IX.

Note 2: Where the approval of the Minister has been obtained, special courses (see p. 11) may be arranged.

Vocational Courses

In Vocational Schools, the time allotted to the teaching of the practical subjects in any one of the Industrial, Agricultural, Home Economics, Commercial, or Art courses shall not be less than 25% of the total time. In a time-table of a pupil exploring two vocational courses, the time allotted to the teaching of the practical subjects of those courses shall not be less than 35% of the total time. Special vocational courses may be arranged with the approval of the Minister.

In the Industrial Course, Drafting is an obligatory shop subject.

Grade X

General Course

Obligatory Subjects

English
Social Studies
Physical Education

Options

Any four or five of

Mathematics, Science, Latin, French, Art or Music or Art and Music, Shop Work or Home Economics, Agriculture, Typewriting or Business Practice.

Note 1: With the approval of the principal, a pupil who is not a candidate for an Intermediate Certificate may select fewer than four options.

Note 2: In schools with Departments of Agriculture, a pupil taking both Agriculture and Shop Work may select five options.

Note 3: The principal should make certain that the pupil in the General Course selects the options which are essential to the course he intends to pursue in Grades XI, XII, and XIII.

Note 4: Re Prerequisite Options. Standing in Mathematics or a language in Grade X is a prerequisite for the corresponding subject in Grade XI. Standing in Science, Art or Music or Art and Music, Shop Work or Home Economics, Agriculture, Typewriting or Business Practice in either Grade IX or Grade X is a prerequisite for the corresponding subject in Grade XI.

Industrial or Agricultural Course

Obligatory Subjects	Vocational and Related Subjects
English	Shop Work or Agriculture and Shop Work
Social Studies	Mathematics
Physical Education	Science

Options

Any one of

Art or Music or Art and Music, Drafting, French.

Home Economics Course

Obligatory Subjects	Vocational Subjects
English	Home Economics
Social Studies	
Physical Education	

Options

Any two of

Mathematics, Science, French, Art or Music or Art and Music, Typewriting or Business Practice.

Commercial Course

Obligatory Subjects	Vocational and Related Subjects
English	Commercial Subjects
Social Studies	Business Arithmetic
Physical Education	

Options

Any one or two of

French, Shop Work or Home Economics, Art or Music or Art and Music, Science.

Art Course

Obligatory Subjects	Vocational Subjects
English	Art
Social Studies	
Physical Education	

Options

Any two of

Mathematics, Science, Shop Work or Home Economics, French, Music, Typewriting or Business Practice.

Guidance Programme

The provision of opportunity for choice of optional subjects and courses makes guidance an essential element of the curriculum of the Intermediate Division. Guidance should not be considered as a separate subject for which one or two teachers of the staff are responsible, but rather as a purpose which integrates the whole school programme and a service for which every teacher assumes a share of responsibility. An effective guidance programme must be directly concerned with the development and adjustment of each individual pupil. It must provide him and his parents with educational and occupational information which is accurate and up-to-date. Through group-guidance and individual counselling, the pupil should be led to make intelligent choices with respect to his education and his future vocation.

The optional subjects of the Intermediate Division afford the best opportunity for exploratory experiences upon which

the pupil may base his choice of a specialized course in the Senior Division. They should also provide him with valuable occupational information incidental to the subject fields concerned. This type of guidance, however, must be supplemented and coordinated by group work and counselling for which regular periods are allotted on the time-table. Group work in guidance should present a broad survey of occupations and afford opportunity for class discussion of topics related to vocations and school courses. Through individual counselling, each pupil may acquire specific information regarding the occupations and the educational courses in which he is particularly interested, and discuss his own abilities and qualifications for them.

Guidance, including a study of Occupations, is obligatory in Grade IX, and may be continued in Grade X. More detailed information on Guidance is given in *Circular I: 3, "Guidance in the Intermediate Division, Grades VII-X"*

Health Programme

Since one of the primary aims of education is the promotion of good standards of physical and mental health for each individual, all divisions of the school programme should contribute to the realization of this objective. Local educational and health authorities are responsible for the health of the pupils, but the carrying out of an effective health programme in the school depends upon the cooperative efforts of administrators, teachers, members of special health services, and members of the caretaking staff.

It is suggested that the health programme in local schools be studied at least annually by a representative committee. Such a committee might consist of the medical officer of health and the public health nurse, a member of the board, the principals concerned, and teachers of Physical Education, Guidance, Science, and Home Economics.

The health programme may be considered under the following headings:

1. Maintenance of a healthful physical environment;
2. Instruction in the principles of healthful living;
3. Provision of special health services;
4. Preservation of good mental health.

Healthful Environment

The school must provide accommodations which promote the health of the pupils. To maintain good health standards within the school attractive colouring of rooms and corridors, cleanliness of floors and furniture, proper seating and lighting arrangements, sanitary washrooms and lunchrooms are essential. Teachers must give constant attention to the temperature, lighting, and ventilation of their classrooms. Outdoor activities should be carried on whenever practicable to provide the benefits of sunshine and fresh air. For such activities suitable areas and equipment are essential.

Health Instruction

Most of the health instruction related to the physical development of the pupil will be given in the course in Physical Education. Courses in other subjects, however, provide instruction in the principles of healthful living which lie within their field. Some of this instruction will be given incidentally as suitable opportunities arise; much of it will be part of the regular units of the various courses. For example, *Physical Education* will stress the importance of physical fitness, the relation of exercise to the structure and functions of the body, the effects of fatigue and the need for rest and relaxation, the effects of stimulants and narcotics, the necessity for good posture, and the principles of first aid. *Social Studies* may include information and activities related to public health services, health legislation, community facilities, advances in medical science, and pioneers in health improvement. *Science* may include topics on the structure and functions of the organs of the body, the composition and function of foods, water and milk supply. *Home Economics* affords opportunity for instruction in nutrition, selection of foods, personal grooming, health factors in the home, and elements of home nursing.

Health instruction in all courses should aim to develop desirable attitudes to personal health which will promote good personal health habits.

Health Services

Special medical, dental, or nursing services are the direct responsibility of the public health authorities in cooperation with the local school board. The physical welfare of the

pupil, however, is the immediate concern of every teacher. The teacher is responsible for observing and reporting symptoms of ill-health, apparent physical deficiencies, or poor health conditions in the school. Full cooperation between teachers and the administrators of special health services is essential.

Mental Health

The mental health of the pupil is inseparable from and as important as his physical well-being. Happy school relationships, purposeful and self-directed activity, and the successful accomplishment of daily tasks help to ensure good mental health. Teachers and guidance counsellors must be alert to the unfavourable disturbances and anxieties in pupils which may result from regimentation, undue competition, overloading of homework, frustration, or poor class management within the school, and from other causes.

Intermediate Certificates

An Intermediate Certificate will be granted, on the recommendation of the principal of a Collegiate Institute, a High, Continuation, or Vocational School, or on the recommendation of the principal of a Public or Separate School, with the approval of the inspector concerned, to a pupil who has completed successfully the courses of study for Grades VII and VIII, and one of the courses for Grades IX and X.

OUTLINES OF COURSES FOR EXPERIMENTAL USE

Each of the following outlines has been drawn up in the form considered most useful to teachers and Curriculum Committees. No attempt has been made, therefore, to present the outlines in the same pattern or in the same amount of detail. Each outline begins, however, with a statement of aims and teaching principles which hold for that subject in all grades of the Intermediate Division.

ENGLISH

English is vital to the general development of the pupils and is, therefore, the direct concern of every teacher. Adequate skill in the use of English is essential to progress in all subjects of the curriculum, in meeting the practical demands of everyday life, and in fulfilling the duties of citizenship in a democracy. To use English well is a valuable accomplishment; to use it inadequately is to be judged as fundamentally uneducated. To make its contribution to the development of the pupils, the teaching of English should be stimulating, systematic, and thorough.

Through the study of English, pupils are helped to comprehend meaning readily and fully, to think clearly, and to communicate ideas effectively. Practice in listening and reading attentively will help pupils to follow a line of thought, to gather ideas, and to widen their experience. Practice in writing and speaking clearly increases the pupils' powers of thinking, for the step towards clarity of expression is a step towards clarity of thought. Thus the effort of the pupils to grasp the precise significance of words and to express themselves sincerely, accurately, and agreeably is a potent influence upon their personal growth. Practice in communication with others challenges pupils to have something worthwhile to say, and to judge their success in saying it convincingly by the reaction of their audience. This challenge develops the habit of self-criticism and stimulates further effort to convey meaning effectively.

English literature is a heritage of excellence in many forms. Studied in a manner appropriate to the level of the pupils' attainment it encourages them to be more exact in their thinking, more mature in their emotional response, and more discerning in their attitude to life. The study of many different kinds of writing aids pupils to acquire a lasting and discriminating interest in reading. This is of the utmost importance. It adds to the pupils' stock of general knowledge, thus enabling them to form personal opinions upon a variety of subjects. It helps them to discover and pursue special interests. It widens their opportunities for enjoyment and provides a means of lifelong self-education.

Principles and Practices

Individual Differences

Since the courses outlined for the Intermediate Division are suited to the normal capacity and experience of pupils at the average age level in each grade, the needs of more talented or less gifted pupils require special attention. Teachers, therefore, must adjust their instruction to provide for individual needs and differences so that each pupil will be challenged to proceed at the rate of which he is capable. To do this, teachers must take into account different personalities, with widely divergent backgrounds and home conditions, and different attitudes towards school training. Thus, in smaller schools several levels of instruction must be carried on in the same class. In larger schools there may be grouping and re-grouping of pupils according to their progress.

Individual Assessment

At the beginning of the school year and at frequent intervals thereafter, the teacher should study and assess the attainments and capacities of individual pupils. The variations in these will increase in successive grades. Pupils who seem to possess almost identical powers in early grades frequently reveal a wide disparity in subsequent years.

Selection, Emphasis, Continuity

In dealing with the different topics of the course of study, it is necessary to keep in mind the importance of selection, emphasis, and continuity. The teacher should not neglect any section of the course, but select and emphasize those parts of each which are most closely related to the pupils' needs and interests.

Local Adaptation

The course of study offers a general plan for adaptation to local conditions. Thus, a community with a large proportion of new Canadians will present language problems and provide resources different from those in other communities.

Forgetting

In attempting to reach a reasonable level of achievement in each grade, the teacher should make allowance for the fact that pupils are prone to forget principles and practices already taught but not thoroughly assimilated. Repetition and review can remedy the lapses of youthful memory.

Teacher Direction

The teacher must be adept in recognizing the most suitable time and opportunity for offering direction to the pupils, neither overestimating nor underestimating their powers of judgment. Assistance is most beneficial when the pupils' efforts have been fully utilized.

Pupils' Interests

Pupils in the Intermediate Division are at a stage in their development when they have many interests. These they hold loyally, often vehemently, even if only for a short time. The teacher can capitalize upon these interests and use them effectively in English activities. But what of the pupils who have few interests, who seem never to have anything to say or anything to write about? These pupils need to be helped and encouraged. Easy reading material, visits to places of interest, class discussions, topics from other subjects, school activities, personal and vicarious experiences will help them to make their contribution. A topic such as "My First Ride in a Plane" calls for simple, sincere expression of thought and feeling about a natural personal experience, whereas "The Aviation Industry in Canada" is a topic so broad as to evoke generalities expressed in language unnatural for an adolescent.

Correction

Regular direction and constructive criticism of written work is necessary. Personal guidance which leads the pupil to improve his own work is of inestimable value. Much effective work can be done by the teacher who moves about among the pupils offering helpful suggestions. Sometimes a good paragraph by one of the members of the class may be written on the blackboard and its merits and defects discussed freely with advantage to all. The teacher's part in such discussions should be only directive. An excellent

practice under proper conditions is to encourage the pupils to work in groups for mutual help and criticism. In all written work credit should be given for the pupils' honest efforts, and defects in the mechanics of expression should not be allowed to obscure merit in the thought and feeling.

Genuine creative ability may be found in only a few pupils of these grades, but creative writing, in the sense that it is inventive, imaginative, and fresh, is fairly common and deserves encouragement and kindly guidance.

Models

Literary models, carefully chosen to suit the age and understanding of the pupils, are useful in stimulating personal creative effort, not mechanical imitation. Frequent use of good models from the pupils' own work can be of special value in encouraging better writing and motivating self-criticism.

Objectives in the Study of Literature

The main objectives in the study of literature are the cultivation of a taste for good reading, the enlargement of experience, the stimulation of the imagination, the enrichment of knowledge, and the development of character. The pupil develops a richer and fuller personality by association with great minds and through wholesome vicarious experiences. An imagination stirred by Kipling's art in the pages of "Captains Courageous" will be less likely to respond to the cheap sensations of the crime thriller. But teachers should avoid fulsome praise of classic writers. Let the author speak eloquently for himself.

The teacher should recognize that it is of primary importance that the pupils enjoy the material which they read. The pupils should not be expected, therefore, to appreciate the merits of literature which is beyond their powers of understanding, nor should the teacher impose adult standards of literary judgment in his direction of the pupils' reading.

Extensive Study

In the Intermediate Division the treatment of literature should be largely extensive. The intelligent and sympathetic

reading of a selection should be followed by group discussion stimulated and directed by challenging questions. The primary aim of this group study is the enjoyment and understanding of good literature, the sharing of emotional response, and the growth of discrimination and good taste. Pupils should be led to feel that their opinions are interesting and worthwhile, and that mutual constructive criticism of one another's opinions is a desirable and natural thing.

Levels of Language

Pupils should be led to recognize that language varies in different circumstances and for different purposes. Language has social significance; it is governed by the rules of good taste as well as good usage. Thus, the language of the ball game is one form of appropriate English, whereas the language of the class discussion is another.

The Teacher of English

The teacher is the pupils' model of good posture and grooming, clear speech, sound judgment, and gracious manners. He should be aware of his constant influence upon the interests, tastes, and personalities of his pupils. The measure of his success in the teaching of English will be the interest of the pupils in good books, their powers of straight thinking, and their ability to speak and write clearly, naturally and sincerely, to read intelligently, and to appreciate the good things of life which are revealed to us through language.

Outline of the Course

This outline has been prepared for the use of Curriculum Committees in drawing up courses of study for the Intermediate Division. It follows closely the outline for Grade VII printed in *Curriculum I:1 (1950)* which, as was stated therein, also provided a sound guide for courses in Grades VIII, IX, and X. The main headings of the previous Grade VII outline have been retained in the present outline for the entire Intermediate Division. In the outline of work under these main headings, additional sub-headings have been included to indicate more advanced work for Grades VIII, IX, and X, and statements have been inserted to assist Curriculum Committees in distributing the work among the four grades of the Intermediate Division.

The conception that grade levels are rigid and correspond to equally rigid levels of progress in all branches of the work in English is unrealistic and should be discouraged among teachers. In each part of the work in every grade of the Intermediate Division there are some pupils who need instruction at a lower grade level and others who need more advanced work. Therefore, teachers must adjust their instruction to meet the special needs of these groups so that each pupil will be challenged to progress at his best rate.

Comprehension

1. Reading skills

   (a) Practice when necessary to increase ability in
   getting the main thought
   following the sequence of ideas or events
   recalling details
   making inferences
   following directions
   locating information—use of table of contents, index, etc.
   finding answers to questions by skimming
   appraising content, examining a book to estimate its usefulness in terms of the topic under study
   testing an opinion

The teacher's first duty when meeting a new class is to discover the individual attainments of his pupils in reading. The teacher may secure assistance in checking his appraisal of the pupils' needs by using standardized reading tests. Necessary practice, beginning slightly below the achievement level, should then be provided. Serious deficiencies require careful diagnosis followed by well-considered prescription and frequent practice.

Since the pupil's success in any subject on the course of study depends largely upon his reading skill, all teachers should give attention to the special reading problems connected with their special subjects. The teacher of English should give extensive practice in the various types of reading—recreational, informative, reflective, and practical—in other subjects as well as in English literature to ensure that the pupils can apply their reading skills to a wide variety of problems and subject matter.

(b) Types of reading

"In the best schools, reading has ceased to be a lesson and has become a pursuit." (Ballard)

- Recreational
- Informational
  - current events
  - conservation
  - special interests
  - widening horizons
- Reflective
  - discovering others' opinions
  - understanding problems
  - making critical judgments
- Practical
  - following directions
  - discovering specific information
  - exploring new ideas
  - assisting in planning
- Report
  - locating material for classroom use in discussions, summaries, reports, etc.
- Reference
  - securing and correlating different kinds of information

2. Library skills

Purposeful practice in real situations in all subjects, including

- recalling how to open a new book, how to turn a page
- practising alphabetical arrangement
- using table of contents
- using indexes in texts and references
- understanding arrangement of encyclopaedias used by the pupils
- using the dictionary for
  - quick location
  - interpretation of pronunciation (syllables, accents, diacritical marks)
  - grammatical use
  - derivation
  - meaning

making outlines or summaries
use of topical headings
key words
selection of quotations, stating sources
logical arrangement
elaboration from the outline for oral and written reports
using illustrations, charts, maps, diagrams
organization, arrangement, and management by the pupils of a classroom library of
available references in all subjects
recreational reading
pupils' own books lent to the classroom library

An atmosphere of interest in good books and wholesome reading should be established in the English classroom and in the school library by the provision of attractive library facilities, including adequate shelving and a wide variety of reading with emphasis on interesting books of adventure and noble deeds. Generous use of tack-boards for the resourceful display of illustrative material, which is topically appropriate and frequently changed, will stimulate interest in events, places, and people as well as in the topics currently being studied in other subjects. Instruction in library practice should be given to the extent necessary for proper use of reference material in all subjects. Pupils will welcome and benefit from sharing in the management of the classroom or school library. Teachers should make good use of the facilities of the travelling library and should cooperate with and encourage the use of the community library. But neither of these agencies can take the place of a well-stocked school library containing the sort of reading which young people like and from which they can derive most benefit. The library is the pulsing heart of the school which gives life and interest to the work in every subject.

3. Study habits

(a) Environment
undisturbed
quiet
with ready access to materials
healthful: light, heat, posture

(b) Clearness of purpose
objective in mind

determination of means to this end
concentrated effort for short periods

(c) Regular classroom demonstrations and practices in supervised study-periods of the techniques applicable to such activities as:

collecting and collating information from two or three sources, e.g., What stage furniture and properties should be used for a scene laid in a Norman castle of the 14th century?

writing a report, e.g., A Visit to an Industrial Plant

making a summary from which to give an oral report, e.g., The Life History of an Insect

memorizing effectively
how to memorize
facts of common knowledge
salient facts for oral reports
quotations from prose or verse

reading for background, e.g., What can we find out about buffalo which will prepare us to enjoy "The Buffalo Hunt"?

making memoranda during or after a lecture or a reading

As his share of the guidance programme, the teacher of English should accept responsibility for assisting the pupils to observe closely, to select information, and to organize it for a definite purpose. The development of good study habits is accelerated when the pupils have a genuine interest in the subject and are convinced of the value of mastering it.

4. Word study

Enlargement of vocabulary through

(a) Savouring and using choice words or expressions as they appear

(b) Spelling, using lists of similarly spelled words which introduce new words, e.g., interior, exterior, inferior, superior

(c) Using prefixes, suffixes, and roots, explained as they appear

(d) Using the dictionary
taught as a skill

regular practice as the occasions arise
(Variant spellings found in any standard dictionary are acceptable.)

(e) Studying words with a background
as the words occur
some separate study
words derived from people and places, e.g., derrick, damask, bayonet, miller, boycott
words derived from mythology, e.g., vulcanize, atlas, jovial, January
naturalized foreigners, e.g., potato, sofa, mutton, matinee

(f) Synonyms, antonyms, homonyms

5. Listening with a purpose
Class exercises to

(a) Get the meaning by
selecting the main ideas
relating these to experience
using context clues

(b) Get the mood from
inflexion and tone
expression
gesture

(c) Overcome handicaps by
eye attention
concentration

(d) Emphasize the obligations of an audience
good manners, in public and school assemblies
attention
appreciation of effort, sincerity, excellence
judgment
weighing arguments
reserving judgment
asking pertinent questions

Training pupils in the neglected art of listening is important. This can be done by setting pupils the objective of understanding a selection and judging its merits from hearing it read aloud by the teacher or a fellow pupil. Questions and

discussion based on the selection will encourage them to listen attentively, critically, and with enjoyment.

Appreciation

The appreciation of good English literature is an element in the study of English which cannot be definitely prescribed or evaluated for the different levels of school experience. It is developed gradually by evolution and refinement and can hardly be measured by the usual yardsticks.

Pupils who are entering the Intermediate Division may be expected to show some evidences of appreciation by their response to the different books which they read and study. We cannot expect them to present critical estimates of their reading either in oral or in written form at this stage. But, as they proceed from Grade VII to Grade X, we can gradually present to them more and more of the elements of form, content, and expression which combine to produce a work of literary art. As they gain more maturity, we can question them more searchingly regarding the qualities of composition which contribute to the excellence of fine literature. But even in Grade X we must not expect pupils to discuss literary style with any mature judgment. We should be satisfied if they are able to comment sincerely and thoughtfully upon the interest of content and upon some of the more obvious qualities of form and expression.

1. Extensive reading, including that of the Approved Readers, for
   - enjoyment
   - information
   - appreciation
   - developing free reading

Extensive reading, both oral and silent, if wisely and sympathetically conducted, should provide a sound foundation for interesting and valuable free reading which will grow in scope and depth as the pupil proceeds through the Intermediate Division, and which should continue to develop throughout the subsequent life of the reader.

2. Intensive study of appropriate selections, mastering content for
   - enjoyment

information
judging reliability
sincerity
usefulness
relation to life
recognizing merit of form
clearness
conciseness
force
order
pattern
beauty of rhythm
sound
imagery
expression
diction
responding to mood and feeling

Personal experiences through reading are the ultimate objectives of all study of English literature. All the literature chosen for study should, therefore, have intrinsic meaning for the pupils at their age and experience level. If it deals with subjects entirely foreign to their lives and experiences and far beyond the scope of their youthful imaginations, it can have no true worth for them. The author's sensory and social experiences, his flights of fancy, his thoughts, and his feelings must all be shared in a very real sense by his readers. Selections for intensive study must, therefore, be sufficiently broad and flexible to suit not only the general grade levels but also the mental capacities, the social situations, and the individual personalities and interests of pupils within each grade.

It is natural that the choice of material will be influenced by the limitations of the pupils' interests and capacities. On the other hand selections of fine literature which require skilful presentation and thoughtful questioning by the teacher should not be excluded. These can do much to improve understanding and appreciation. Some selections at least should induce even the most capable and intelligent pupils to reach above their present levels in order to grow in taste, appreciation, and understanding.

Because of the variety and diversity of material required for the study of literature throughout the Intermediate Divi-

sion, it is manifestly impossible to designate definite selections as applicable to only one grade. But, as pupils proceed through the Intermediate Division, an increasingly intensive study of suitable literary selections should be possible in keeping with their growing capacities.

Pupils in these grades may be expected to improve their powers of discrimination as they progress. They should become increasingly capable of distinguishing fine literature from shoddy writing, honesty from prejudice, clearness from obscurity, order from confusion, beauty from ugliness, and sincerity from pretence. Throughout the Intermediate Division it should be the aim of the teacher to help the pupils to recognize the value of plain, clear, orderly expression; accurate and picturesque words; pattern, variety, and rhythm of sentences; effective development in paragraphs; unity, coherence, and emphasis; the artistic use of colour, music, imitative harmony, comparison, contrast, simple imagery; and the basic metres and rhyme schemes of English poetry.

3. Encouraging appreciation by free reading based on the interests of the pupils

    exposing pupils to many attractive books
    introducing time-tested favourites of this age-group
    new books of merit within the pupils' capacity
    reading by the teacher, especially of passages which the pupils might not otherwise appreciate

Perhaps the greatest service which the teacher of English can offer his pupils is the encouragement of wholesome reading habits. It is the duty of the teacher not only to interest pupils in reading but also to provide access to attractive reading material, old and new, which is at once within the pupils' grasp, stimulating in nature, and of good quality. Above all, it is important that teachers should present the classics with care and judgment, neither neglecting them for purely modern literature nor forcing them upon reluctant readers. Finally, we should clear our library shelves of uniform and unattractive sets of the classics published in cheap editions and printed in small type on poor paper, and replace them with modern, well-illustrated editions tempting to the youthful eye.

Naturally the pupils will be expected to read many other books in addition to those studied in the classroom. As evidence that they are reading acceptable books, they should be required to report briefly on their free reading. Reports should be informal oral comments expressing their sincere opinions. If written reports are required, they should be brief and meaningful. The pupils should be encouraged to keep a list of all books read and to submit this to the teacher from time to time.

4. Memorizing apt expressions
    - well-turned phrases and sentences
    - quotations for use
    - prose or verse passages
        - chosen by the pupils
        - suggested by the teacher
    - passages from the Bible

About one hundred lines chosen from both poetry and prose should be memorized in each grade. It is impossible to suggest suitable passages for each grade because of the wide diversity in taste and appreciation that exists even within a single class. The selections to be memorized should be chosen by the pupil. Teachers should not be disturbed to discover that some pupils will choose selections that, according to adult standards, are not good poetry, nor should they in their desire to improve the immature taste attempt to force an appreciation of standards for which the children are not ready. Such attempts are rarely successful and frequently they result in lessening or killing entirely the love of poetry they were designed to foster. As the pupils mature, their preferences change. As experience widens, tastes improve. The inferior tends to be discarded and the better preferred, but this is only true when taste is not forced and when literature of different kinds and quality has been sampled so that the pupils themselves can exercise their powers of choice.

The dramatic presentation of plays and choral reading provide purposes which the pupil readily understands and accepts for memorization.

Presumably poetry is memorized to be quoted. In the testing of memory work, emphasis should be placed upon understanding and appreciation as evidenced in the oral presentation.

A considerable body of opinion supports the memorization of fine poetry selected by the teacher. It is the view that this is an effective way of "storing the mind" with worthwhile literature and that many adults in moments of quiet reflection derive pleasure and satisfaction from the recollection of memory work learned in their school days. Teachers who take this view can, no doubt, communicate their enthusiasm to the pupils and arouse a desire to memorize a selection of which the teacher is particularly fond. The unmotivated assignment of selections for memorization can do nothing but harm.

5. Choral reading
    - interpreting and enjoying rhythmic passages
    - encouraging the self-conscious adolescent

Some teachers will wish to pursue the practice of choral reading until the recitation becomes a polished and artistic oral exercise. Others will be satisfied with its more practical use as a pleasant aid to memorization. It can become an enjoyable group experience, but its use should not cause individual practice in oral reading and recitation to be neglected.

6. Collecting examples of choice prose and poetry
    - contemporary as well as earlier literature
    - illustrating other subjects, e.g., occupations, Canada and other lands, heroic endeavour

Oral Communication

1. Having something to say
2. Giving simple directions and explanations
3. Informal conversation
    - opening a conversation
        - being friendly
        - choosing a topic
    - keeping the ball rolling
    - being courteous
    - greeting newcomers to the group
    - making introductions
    - taking one's leave

Informal conversations will lead naturally to discussion and practice contributing to competence in a great variety of situations, such as extending congratulations or condolences, telephoning, apologizing without self-disparagement, conducting the formal interview.

4. Narration
    - relating personal experiences
        - anecdotes
        - stories that have been read
    - making enquiries and explanations
        - to ensure full understanding
        - to gain facility in questioning and answering

5. Discussion
    - recognizing essential matter
    - speaking to the point
    - participating freely
    - discussing problems of everyday living
    - seeing both sides of a question
    - conducting special enquiry periods by panel method, etc.
    - debating—informal, formal

A good class discussion is more than casual talk. It deals with a subject within the range of the pupils' experience. It has a definite purpose which they accept as worthwhile for the group. It follows the accepted rules of courtesy and orderly procedure. It takes place in a setting which encourages all pupils to contribute to the common purpose with the confidence that relevant facts and sincere opinions will be respected although they may be refuted. A good discussion aims at bringing out evidence which provides a basis for making decisions or taking action, but it will be successful if the pupils deepen their understanding of the subject by exchanging their ideas. The teacher's part is that of a senior partner who leads the pupils to evaluate their own efforts and who has the responsibility of ensuring that the discussion has an evident pattern and a definite goal.

As the pupils mature, the classroom discussion may be used more and more effectively in bringing out diverse points of view, presenting problems, airing grievances, offering solutions, summarizing and evaluating, and determining group

action. The benefits of this practice in discussion will be evident in all the activities of the school programme, and the responsibilities of the pupils in these activities should be extended from grade to grade. Each pupil should be led to recognize the value of his participation in discussion both to himself and to the class, and as the pupils progress through the Intermediate Division, they can be guided to take over from the teacher an increasing amount of the speaking involved in the daily lessons. "Teaching is the art of assisting discovery to take place." (Mark Van Doren)

6. Reading for others
    - expressing the author's purpose
        - silent preparation
        - understanding the point
        - responding to the feeling
        - grouping and emphasizing the words
        - interpreting the music
    - making the best use of the voice
        - regular instruction and practice in clear, natural enunciation
        - using the lips and the tongue
        - breathing and posture
        - keeping the eye ahead of the voice
        - correct pronunciation
    - using the voice recorder
        - hearing ourselves as others hear us

Reading for others will contribute to the development of oral communication when purposeful to both the reader and the audience. Reading for others may also be used as an intermediate step towards addressing an audience.

In oral expression the teacher should stress the importance of clear articulation and enunciation, together with the basic principles of timing, phrasing, and natural inflection of the voice. Serious speech defects require the services of a specialist; the teacher's efforts to overcome them may do more harm than good. Injunctions to speak more loudly or clearly are of little value. The teacher's own good example, coupled with specific directions about moving the lips or sounding the endings of words, and an acceptance by the class of the importance of good speech, will accomplish much more. The frequent use of a voice recorder is a valuable aid in improving speech.

7. Assemblies

regularly held, in classroom or auditorium
organized and conducted by the pupils
subject to teachers' advice and approval
followed by class evaluation

Reading an announcement, a letter, a portion of the scriptures, or a prayer to the assembly will help to establish the confidence which is essential to platform speaking.

8. Dramatization

informal classroom dramatics
more formal presentations
choosing a play or making a play
assigning parts after tryouts
discussing costume, scenery, properties
assigning duties
rehearsing
making changes as necessary
final rehearsal
presentation to others

Dramatic production and acting in the classroom, the school auditorium, or the puppet theatre will give the pupils valuable training in many activities. Here they will find scope for their varying talents and interests. Cooperation, initiative, self-expression, growth of personality, and fuller appreciation of dramatic literature will all be fostered by the presentation of suitable plays capably and wisely directed. With encouragement pupils can write brief plays or scenes based upon their reading or experiences. They can share the direction, the making of properties and costumes, and the many other phases of dramatic production.

9. Extra-curricular activities

organizing a club
conducting a meeting
observing conventions of procedure
participating in classroom meetings
Junior Red Cross
house-league activities
using these skills in community activities, church, clubs, athletic leagues.

10. Speaking to an audience
    - platform manners
    - confidence
    - careful preparation
    - increasing demands through graded activities
    - sincerity and enthusiasm
    - naturalness of tone
    - practice in introducing and thanking speakers

As a preparation for platform responsibilities, classroom practices in the art of introducing or thanking a speaker, welcoming or bidding adieu to a visitor, making a charitable or patriotic appeal will take on life and meaning for the pupils. Each pupil should be given as many opportunities as possible for this practice. The teacher and the pupils may discuss criteria for judging the content and delivery of public addresses and arrive at a reasonable standard for themselves. While deprecating the mere memorization of unoriginal material and emphasizing the importance of originality and spontaneity, teachers must recognize that refinements in the art of public speaking are highly mature developments. In the Intermediate Division the quality of the performance is secondary to the growth of the pupils' skill and confidence.

Written Communication

In helping pupils to improve the expression of their thought in writing the teacher should keep in view the following objectives:

(i) to encourage pupils to make their own observations and to record their own thoughts within a widening range of experience,

(ii) to stimulate them to explore and elaborate these ideas and to develop their own powers of thinking,

(iii) to enable them to convey to other people the results of their thinking as clearly and completely as possible.

Since the pupil's progress in oral expression contributes to his progress in writing, the teacher should regularly insist upon oral answers which are coherent and convey the thought completely. This is the readiest way of developing the power to think coherently and to frame a straightfor-

ward English sentence. Pupils should be asked to write on subjects of which they have some knowledge and on which they have the right to an opinion of their own. The teacher can find thought-provoking subjects for written work through discussions with the pupils or lead the pupils to find such subjects for themselves through planned activities. Pupils should be led to decide for themselves in advance the people for whom they are writing. The audience may be the writers themselves, the teachers, the class or the school, parents, friends, or the community. But the audience should be a real one within the capacity as well as the right of the pupil to address. Asking pupils to write without definite readers in mind, as if they were addressing a vacuum or the civilized world, encourages pretence and platitudes.

Pupils should be led to define clearly for themselves their purpose in writing. The purpose may be to tell a good story, to describe, to explain a simple process, to report an event, or to support an opinion, in order that the reader may be entertained, informed, or convinced. Most pupils will be challenged to their best efforts if their writing is closely related to practical affairs and motivated by real situations, such as producing a school paper, obtaining a position, contributing to a project or a meeting. This is of real importance, for many teachers of English have at the back of their minds the text-book and the examination rather than the activities of practical life.

1. Extending general skills through
    - study of needs
    - pupil exercises based on
        - needs
        - interests (personal and group)
        - work in other subjects
        - outside experiences
    - growth in power to analyse and judge
    - praise for sincere effort, spontaneity
    - special and specific help for those limited in ability and background
    - self-improvement through revision and refinement

2. Organizing
    - determining purpose
    - planning the attack
    - locating and recording material

selecting pertinent material
arranging material
topic, main idea
contributing ideas
challenging opening
logical sequence
effective closing

3. Writing: narration, description, exposition
suggested by pictures and cartoons
pantomime
entertaining anecdotes or incidents
local happenings
based upon reading
derived from work in other subjects
adding a sequel to a story
making a similar story
different characters, plot, setting
completing a story
given the beginning, the middle, or the end
imaginative stories
conversations and dramatizations
announcements for bulletin board or school paper
descriptions
definite point of view
dominant impression
selection and arrangement of details
using the apt word
explanations
types and uses
planning for clarity
introducing subject and getting attention
explaining point by point and in logical and understandable fashion
summing up and rounding off the explanation
records—diary, journal, note
autobiography
summaries and simple précis

Most pupils entering the Intermediate Division tend to write a mixture of narrative and description and lean towards pure story telling. It is the task of the teacher in the Intermediate Division to take the pupil at whatever stage he may be and to advance and enlarge his skill in varied

types of writing. This means a continuation, and sometimes a correction, of earlier practices accompanied by a gradual introduction of new and more mature assignments. For example, a purer type of description may now be encouraged and developed; accounts of assemblies, lectures, plays, or concerts will become more detailed and vivid; more assignments will require written answers, based on paragraphs, articles, chapters, or whole books, which develop naturally from the earlier stages of summarizing and outlining; records, journals, diaries, logs will become progressively more mature. But none of this will happen in a vacuum. It will happen only where there is intelligent appraisal of the pupils' abilities and needs, where there is thoughtful discrimination as to type and amount of work to be done, and where there is genuine motivation at the outset and warm satisfaction at the end.

4. Letter writing
    - the art of personal communication
    - friendly informal letters
        - as occasions arise
        - about real situations
        - basic letter conventions
            - parts
            - punctuation
            - capitals
            - spacing
            - addressing envelopes
        - news letters to family, friends, pen pals
        - good manners in letters (informal and formal)
            - invitations
            - thank-you letters
            - letters of appreciation
                - apology
                - acceptance
                - congratulation
                - sympathy
                - regret
        - sending messages on post cards
        - telegrams and night letters
        - business letters
        - applying for work
        - ordering articles
        - requesting information

correcting an error
making a claim or complaint
discussing a business venture
letters of instruction
a travel letter to family, friends, or strangers in other cities and countries

Letter writing is an art. The writer must have clearly in mind the purpose of his letter and try to attain it by putting himself in the place of the person for whom the letter is intended. Teachers must emphasize the message of the letter and help pupils to determine the proper mood and purpose. The mechanics of the letter should receive only a small portion of the teaching time. The various types of letters should not be taught in routine fashion but should be introduced as occasion arises, e.g., a letter of sympathy to a member of the class who is ill, a thank-you letter to the school board for providing a class treat.

5. Recording the minutes of a meeting
   - time
   - place
   - motions
   - business transacted

If the officers for organizations such as Junior Red Cross, hobby clubs, and assemblies are changed frequently, many pupils will have the opportunity to gain experience in executive duties. The purpose of this type of work is primarily growth and development of the pupil's ability to conduct a meeting and to discharge his duties properly in any executive capacity.

6. Making or contributing to a class paper or magazine
   - a joint enterprise
   - everyone given a chance at various duties
   - teacher supervision (not domination) to improve pupils' taste and judgment
   - general pupil contribution
     - story, news, poems, illustrations
   - emphasis on benefit to pupil through participation
   - a suggested plan
     - each pupil contributing a written page, article, cartoon, etc.

revisions by editorial staff with teacher help as needed
mimeographed where possible
assembled, covered, and bound by art staff
distributed by circulation staff at little or no cost

Thought, Structure, and Grammar

1. The sentence
   - as a unit of thought
   - classification as an aid to written expression
     - according to meaning—assertive, interrogative, imperative, exclamatory
     - according to structure—simple, compound, complex
   - parts of a sentence as an aid to clarity and variety
     - subject
     - predicate
     - modifying parts
       - adjective—word, phrase, clause
       - adverb—word, phrase, clause
     - completing parts—object, completion
   - types of sentences
     - loose, periodic, balanced
     - special effect of each type
   - gaining effect through
     - unity
     - coherence
     - emphasis
     - variety
     - force—diction, word order
   - oral and written practice
     - to enable pupils to use sentences with clarity, correctness, and special effect

2. The paragraph
   - recognition of the paragraph as a unit of thought
     - unity—one division a phase of a subject
     - order—logical sequence of ideas
     - coherence—interrelationship of ideas
   - the structure of a paragraph
     - topic sentence
     - development of idea—details, contrasts, comparison, examples

effective conclusion
the writing of paragraphs
models as a basis for study
oral preparation for written work
information derived from other subjects
summaries of information from reference books
simple exercises in précis writing
planning and writing compositions of more than one paragraph—means of transition and reference

Pupils should be enabled to recognize and appreciate a good paragraph as a definite pattern for the expression of a unit of thought and also to write lucidly and effectively one or more paragraphs on topics suited to their stage of development.

3. Grammar

recognition and use of noun, pronoun, verb, adjective, adverb, preposition, conjunction, interjection
classification as an aid to clarity, accuracy, and vividness
nouns—common, proper, abstract, concrete
pronouns—personal, demonstrative, indefinite
conjunction—co-ordinate, subordinate
verbs—transitive, intransitive, copula
agreement of the verb with its subject
phrases
adjective
adverb
verb
other types as need may arise

clauses
principal
subordinate
adjective
adverb
noun

the structure of sentences
simple and clausal analysis as an aid to the understanding and improvement of sentence structure

- verbs
  - agreement with subject
  - recognition and use of tense forms
    - present
    - past
    - future
    - sequence of tenses
  - mood
    - indicative
    - imperative
    - subjunctive (brief reference)
  - voice
    - active
    - passive
  - infinitives and participles
    - use to secure force and conciseness
  - special exercises in usage
    - correct use of commonly misused past tenses and perfect participles, e.g., saw, seen, did, done
    - distinction as the need arises between its, it's; their, there; to, too; etc.
    - irregular plurals of nouns in common use
    - formation and use of possessive forms in nouns
    - comparatives and superlatives in adjectives and adverbs
    - precision in the use of prepositions, e.g., in, into; on, upon; etc.

The study of grammar is a means of improving the expression of thought and provides standards for determining its correctness. It should, therefore, be functional in the sense that it is based upon the pupils' needs and is of practical value; its scope and emphasis are determined by the requirements of individual pupils as revealed in their speech and writing. It should be taught as an ordered description of current accepted practice in the use of our language. Terminology should not be emphasized for its own sake but should be used only as an aid to clarity and accuracy in speech and writing. Pupils should be led to discover the fundamental rules of grammar from carefully selected examples. The discovery of these rules should be

closely followed by their application and by plenty of purposeful practice.

"In its right place, at the right time, and in right measure, instruction in grammar is not only a desirable but an essential part of the English course." (Ballard)

Spelling

attention to spelling in *all* written work
habitual use of dictionary
regular practice adjusted to individual needs
additional time devoted to word-study by good spellers
ample practice for weak spellers according to their needs
variety of techniques, such as
    careful pronunciation
    noting differences in words of similar form
    inducing a pride in good spelling
    keeping a personal list
encouragement of vocabulary growth
continued attention to the uses of capitals
regular use of the blackboard to familiarize pupils with new words which might be misspelled
special attention in context to commonly misspelled words:

    does, knows, off, there, too, write, asked, buy, coming, dropped, shining, stopped, sure, taking, their, quite, truly, woman, believe, busy, through, written, break, different, isn't, don't, quiet;

    threw, two, whole, whose, writing, all right, almost, beginning, children, led, forty, its, loose, lose, loving, together, until, across, business, can't, women, fourth, minute, piece, receive, easily, immediately;

    stretch, toward, certain, describe, hoping, already, library, separate, speech, whether, won't, wouldn't, description, disappointed, finally, generally, government, grammar, similar, necessary, principal, probably, sincerely, definite, divide, lady's, ninth, eighth, twelfth;

    preferred, usually, ninety, quantity, interesting, athlete, prevent, captain, course, formerly,

athletics, sandwich, intramural, studying, laboratory, choose, losing, laid, siege, weather, answered, didn't, doesn't, really, occurred, pleasant, accommodation. (Hatfield: *An Experience Curriculum in English*)

acceptance of variant spellings found in any standard dictionary

Instruction in the simple rules of spelling and functional practice in the spelling of words suited to the pupils' level of maturity and commonly used in their written work should be carried on methodically. Instruction in spelling must keep pace with reading and vocabulary development. Emphasis should be placed upon introducing and testing new words in context. Correct spelling can best be achieved by first understanding the word, and then seeing, saying, and writing it until it is mastered. The real test of the ability to spell a word is in its actual use in written work. Some pupils need very little help in spelling; most pupils need considerable help. For all pupils short lists of words well mastered are of greater help than long lists treated mechanically and spasmodically.

Handwriting

pride in good craftmanship
care and attention in all work
legibility through
    careful formation of letters
    attention to margin
    spacing
    alignment
    uniformity of slant
importance of correct writing posture
gradual increase in speed without loss of legibility
individuality in style allowed but neatness and legibility required
regular writing periods for pupils requiring assistance
    drills to correct specific errors
    pupils excused when satisfactory standards reached and maintained

Responsibility for handwriting is shared by all teachers, but the teacher of English assumes the primary responsibility for the maintenance of good standards of neatness

and legibility throughout successive grades. Needless to say, teachers should set a good example, especially in blackboard writing.

Text-Books

For pupils' text-books on the approved list, reference should be made to *Circular 14, Text-Books Authorized, Approved, and Recommended,* and to subsequent announcements which may be made during the year by the Department. In addition to the books on this list, it is understood that several series of literature and language texts for Grades VII, VIII, IX, and X are in preparation.

For English literature in Grades IX and X, it is suggested that the course include at least one book from three or more of the following divisions: (i) a novel (ii) a Shakespeare play, a modern play, or a collection of one-act plays (iii) a collection of shorter poems—chiefly narrative (iv) a collection of myths and legends.

Reference Books for Teachers

General

Balcon et al: *English Language and Literature.* Ryerson.
Ballard: *Teaching and Testing English.* Clarke, Irwin.
Craig: *The Junior Speech Arts.* Macmillan.
Haddow: *On the Teaching of Poetry.* Ryerson.
Hartog: *Words in Action.* Clarke, Irwin.
Lewis: *Poetry for You.* Copp Clark.
Morris: *Drama is Fun.* Ryerson.
Pinto (Ed.): *The Teaching of English in Schools.* Macmillan.

Reading

Gray (Ed.): *Classroom Techniques in Improving Reading.* Gage.
Hicks: *The Reading Chorus.* Clarke, Irwin.
Smith: *Books for Boys and Girls.* Ryerson.
Teacher's Guide—Life and Literature, Books I and II. Nelson.

Composition

Alstetter: *We All Talk.* Nelson.
Kenny: *A New Course in English Composition.* Clarke, Irwin.
Pocock: *Pen and Ink.* Dent.

Shaw: *Writing and Rewriting.* Musson.
Woolley, Scott, and Tressler: *Handbook of Writing and Speaking.* Copp Clark.

Usage

Annandale: *Large Type Concise English Dictionary.* Ryerson.
Freeman: *Plain English.* Dent.
Fowler: *Modern English Usage.* Oxford.
Fowler: *The Concise Oxford Dictionary.* Oxford.
Roget: *Thesaurus.* Longmans.
Thorndike: *Century Senior Dictionary.* Gage.
Webster's Dictionary of Synonyms and Antonyms. Allen.
Webster's Collegiate English Dictionary. Allen.

PHYSICAL EDUCATION

Aims

1. To promote the healthy growth and physical fitness of the pupil.
2. To help the pupil to develop the fundamental physical skills—walking, runnning, jumping—the derived skills peculiar to games and rhythmics, and good posture.
3. To raise the standard of health and physical fitness.
4. To promote desirable attitudes and behaviour—especially in leadership, sportsmanship, and cooperation.
5. To encourage sensible participation in games and physical activities during leisure time.
6. To help the pupil acquire good personal habits based upon knowledge of the principles of good physical and mental health.

General Suggestions

1. An effective programme will be based upon knowledge of the interests and of the physical, mental, and emotional needs of the pupils.
2. Services within the school should be provided for emergency treatment and for personal problems in mental and physical health.
3. A high standard of cleanliness and orderliness should be maintained in playrooms, gymnasiums, locker-rooms, and showers.
4. Activity periods should be conducted out of doors whenever weather and facilities permit. Pupils should change into suitable costume for activity periods and have facilities for doing so.
5. Physical education offers many opportunities for pupils to gain experience in leading groups, to make decisions, and to engage in cooperative effort. All pupils should be given an opportunity to take responsibilities for the organization and direction of the programme under the supervision of the teacher. Dividing the class into groups

and rotating the responsibilities will help all pupils to gain the benefit of this experience.

6. The teacher should keep careful records in order to evaluate the pupils' progress.
7. The programme should include periods of supervised play, intramural competition, sports days, and play days. Extra-curricular activities should afford every pupil an opportunity to participate.

Outline of the Programme

A detailed outline of a course, "Physical Education for Grades VII—X", is being issued separately.

Grades VII and VIII

In each grade three periods per week should be allotted to physical activities and one period to classroom instruction.

Boys

Physical activities
- introductory activities
- group games and relays
- individual athletic activities
- game skills and team games

Health education
Physical education

Girls

Physical activities
- games
- rhythmics
- general activities

Health education
Physical education

Grades IX and X

In each grade three periods per week should be allotted to physical activities and one period to classroom instruction.

Boys

Physical activities
- introductory activities
- tumbling
- apparatus work
- games

Health education
Physical education

Girls

Physical activities
- gymnastics
- rhythmics
- games

Health education
Physical education

Facilities and Equipment

Urban Schools

Indoor facilities such as a playroom or gymnasium and an outdoor area of suitable size are necessary for the conduct of an effective physical education programme. The outdoor

area should be arranged to include a jumping pit, a softball diamond, a volleyball court, and an area for games such as soccer.

In order to ensure active participation by all students in the instructional period the following equipment should be provided in sufficient quantity:

balance benches
basketballs
basketball backboards
climbing rope
hockey sticks
hurdles
inflated rubber balls
jumping standards
mats
rugby balls
shot puts
skipping ropes
soccer balls
softballs and bats
timer
tumbling box
vaulting poles
victrola and records
volleyballs
volleyball standards and nets

Rural Schools

Classroom desks should be movable in order to provide a space for the conduct of an indoor programme during the winter months. Each school should also prepare an outdoor space of suitable size to include a softball diamond, jumping pit, and an area for games.

The following equipment should be provided in sufficient quantity:

balance bench
bean bags
goal hi
horseshoes
Indian clubs
inflated rubber balls
jumping standards
mat
ping pong equipment
skipping ropes
soccer balls
softballs and bats
vaulting pole
victrola and records
volleyball standards and nets
volleyballs

Much of the above equipment, e.g., jumping standards, tumbling box, balance benches, etc., may be constructed very cheaply by individual schools. Specifications for the construction of this equipment are available.

Reference Books

Boys' Programme

Physical Activities

Board of Education (London, England): *Syllabus of Physical Training for Schools 1933.* Copp Clark.

Cotteral and Cotteral: *The Teaching of Stunts and Tumbling.* Copp Clark.

Craine: *Teaching Athletic Skills in Physical Education.* Inor Publishing Co., New York.

Mason and Mitchell: *Active Games and Contests.* Copp Clark.

Sehon et al: *Physical Education Methods for Elementary Schools.* Saunders.

Sport Guides and Rulebooks. Copp Clark.

Track and Field Rules and Records. Ontario Athletics Commissioner, Toronto.

Athletic Handbook. National Council of the Y. M. C. A., Toronto.

Health Education

Jones et al: *For Healthful Living.* Clarke, Irwin.

Phair and Speirs: *Good Health.* Ginn.

Girls' Programme

Games

Board of Education (London, England): *Syllabus of Physical Training for Schools 1933.* Copp Clark.

Bryans and Charlesworth: *Skill in Games.* Dent.

Mason and Mitchell: *Active Games and Contests.* Copp Clark.

Official Guides (Volleyball, Basketball, Softball, Soccer). National Section on Women's Athletics, Washington, U.S.A.

Slade: *Soccer.* Western Technical-Commercial School, Toronto.

General Activities

Cotteral and Cotteral: *The Teaching of Stunts and Tumblng.* Copp Clark.

Horne: *Stunts and Tumbling for Girls.* Copp Clark.

Munden: *Suggestions for the Use of Small Apparatus in Physical Education.* Ling Physical Education Association, Bidborough Street, London, England.

Rhythmics

Bartlett et al: *Rhythms and Dances.* Clarke, Irwin.

Bryans and Madsen: *Scandinavian Dances,* Volume 1. Clarke, Irwin.

Evans: *Childhood Rhythms.* Book Society.

Ford: *Good Morning.* Heintzman.

Lee: *Dance With Me.* Ryerson.

Neilson and Van Hagen: *Physical Education for Elementary Schools.* Copp Clark.

Health Education

Best: *The Human Body and Its Functions.* Clarke, Irwin.

Corner: *Attaining Womanhood.* Musson.

Health Education. National Education Association and the American Medical Association, Washington, U. S. A.

Jones et al: *For Healthful Living.* Clarke, Irwin.

Phair and Speirs: *Good Health.* Ginn.

Robertson: *Fundamentals of Health.* Copp Clark.

Films

Excellent films on physical education and health education are available from the Audio-Visual Aids Branch, Department of Education.

SOCIAL STUDIES

Social Studies is the study of man in relationship to his environment and to other people. This central theme embraces in one subject history, geography, civics, and guidance. If this theme is emphasized, the unity of the course will be preserved, although at times the specific material and objectives may belong to only one of its branches.

Social Studies should help the pupils to understand and to improve the democratic way of life. At present our material progress has outstripped our social development. We must define and meet our responsibilities to society more effectively if we are to live on good terms with our fellow men.

Aims

Knowledge and Understanding

1. The foundation the past has laid for the present.
2. The relationship between physical environment and the lives of people.
3. The interdependence of peoples.
4. The differences between peoples; customs which are different are not necessarily inferior.
5. The relationship between rights and responsibilities in a democracy.
6. The sacrifices made for our democratic way of life.
7. The necessity for conserving our natural resources.

Skills

1. Facility in the use of books, periodicals, charts, and maps.
2. Collecting, organizing, and using in activities data gathered from various sources.
3. Ability in critical thinking, drawing conclusions, expressing opinions, and making practical application of the knowledge gained.
4. Taking an effective part in group discussions and activities.

Attitudes

1. A respect for peoples and individuals unprejudiced by qualities of race, colour, class, creed, or national origin.
2. A respect for the decisions of the majority and the points of view of minorities.
3. The recognition that all work that needs to be done is honourable.
4. Recognition of the importance of work which is undertaken for the worker's own satisfaction and enjoyment.
5. A respect for personal and public property and for our natural resources.

Behaviour

1. The practice of acceptable social behaviour.
2. The exercise of initiative and the acceptance of responsibility.
3. Participation in community affairs.
4. Cooperation with individuals and groups without regard to nationality, religion, or social position.
5. Reading good books for information.

Guiding Principles

1. History and geography should be closely linked to show the effect of the cultural and physical environment on man's life. The Guidance Programme should show the pupils how the knowledge gained can be applied to their own conduct.
2. Citizenship is not a subject to be taught but a spirit to be engendered. Social Studies provides many opportunities for arranging activities which develop the qualities of good citizenship.
3. Facts are important to the pupils when they enable them to explain events, understand their environment, and bring the past and the present to life. Facts should be organized so that there is a natural growth from knowledge which is fragmentary and accidental to knowledge which is unified and meaningful.
4. It is better for pupils to find out information for themselves and draw conclusions under the teacher's guidance than to have information given to them. The habit of judgment can be fostered in pupils by leading them to

think and reason for themselves about Social Studies problems, especially those which arise in the ordinary life of the school and the community.

5. Information gathered from many sources and from several books is more useful and stimulating than that gathered from one text. Historical novels and magazine articles are better collateral reading than books which closely resemble the text.
6. Accurate and balanced information about typical life in other lands is more important than the strange, bizarre, and unusual. Democracy should be presented not as an ideal which has been attained but as a desirable way of life in which improvements are continually being sought.
7. Topics may be related to contemporary life through current events. For example, in studying Magna Carta the pupils can appreciate its effect upon the freedoms we enjoy to-day through study of a contemporary legal problem.
8. Interest in a subject develops through successful activity. The teacher should arrange his programme to provide for individual differences and for work in which each pupil by honest effort may succeed.
9. Pupils gain valuable experience by working together in groups to plan, organize, and present material. A well planned programme will require the pupils to exercise initiative and discharge responsibilities. The period of early adolescence is the best time for co-operative class work.
10. Social Studies can be correlated successfully with other subjects—for example, with English through dramatization, discussion, vocabulary study, writing stories, reports, diaries, and by using Social Studies subject matter in English compositions.
11. Maps, charts, graphs, illustrations are often more meaningful to pupils than written notes. Good records are brief, and prepared by the students not dictated by the teacher. Letters, descriptions, summaries, newspaper reports are more valuable than notes which merely reproduce the text. The making of illustrated booklets on countries, regions, and Social Studies themes provides a valuable exercise in research, selection, and organization.

12. Visual aids and real objects bring topics to life. The Audio-Visual Aids Branch, Department of Education, has a good collection of films and slides. The most useful collections of objects and visual aids are those built up within the school.
13. Pupils should read, use, and make maps frequently. They should be able to use information from maps as readily as that from the printed page. Simple blackboard sketches in coloured chalk developed by the teacher and sketch maps by the pupils are a valuable means of focusing attention on a few salient facts. Rubber-stamp maps and large outline maps of masonite provide a means of making notebook and blackboard maps easily and quickly.
14. The best basis for introducing and understanding social relationships is the local community itself. An understanding of the environment and of the peoples which make up our communities is the best background for interpreting problems on a national or world scale or for re-creating the past.

Reference Books and Text-Books

For pupils' text-books on the approved list, reference should be made to *Circular 14, Text-Books Authorized, Approved and Recommended.* In addition to these text-books, a list of reference books suggested for consideration by teachers and Curriculum Committees follows the outline of the course in each grade. Books in the following list are suggested for teachers' reference in all grades of the Intermediate Division.

Reference Books for Teachers

Finch and Trewartha: *Elements of Geography.* McGraw-Hill.

Hemming: *The Teaching of Social Studies.* Longmans.

James: *The Geography of Man.* Ginn.

MacLeod: *Citizenship Training.* Dent.

Report of the Select Committee on Conservation, 1950. King's Printer, Toronto.

Smith and Phillips: *Industrial and Commercial Geography.* Holt.

Stamp and Kimble: *The World, A General Geography.* Longmans.

Vogt: *The Road to Survival.* McLeod.

Whitney: *Soil and Civilization.* Van Nostrand.

The Canada Year Book. Dominion Bureau of Statistics.

Grade Seven

Canada

Unit I Our Local Community

Objectives

1. To understand how the community began.
2. To appreciate the contributions of many peoples and individuals.
3. To make judgments on the basis of fact rather than prejudice.
4. To develop a feeling of partnership with the various groups which comprise the community.
5. To develop a growing sense of belonging to the community.
6. To discover the geographical features of the community and to understand their effects.

Topics	Suggestions
1. The people of our community (a) national backgrounds (b) religious groups (c) special contributions of groups and individuals (d) unifying influences, combatting prejudice, objectionable propaganda, "scapegoating" (e) welcoming newcomers to the community	Find the national origins of families represented in the class. Make a census of community groups. Make a map showing their ancestral homes. Make an oral report on a famous man from your ancestral group. From the daily paper find examples of good citizenship, and examples of propaganda and prejudice. Write a skit contrasting a reasonable with a prejudiced person, or one dramatizing the arrival of a newcomer to your community.
2. Living and working in our community (a) types of work carried on and reasons for them	Make a map showing the chief industries. Visit a factory or interview the owner to find the sources of the materials used and where the

(b) the value of all useful work and the interdependence of workers	goods are sent.
	Make a map or chart of this information.
(c) sources of raw materials and equipment used in the community	Investigate the evils of slums by observation and from newspapers.
(d) housing	Find out what building restrictions apply to a building under construction, or to the school.
(e) reasons for restrictions and planning	Discuss purpose of them.
(f) the dependence of one community upon another	Make a sand-table model of the community.
	What agencies are responsible for community planning? What plans are in progress?
	Discuss practical ways of beautifying homes and school grounds. Organize a project for improving the school grounds or decoration.
3. Community organizations and services: church, library, health, service and other clubs, farm forums, home and school, night school, scouts, and guides	Students make a survey of community organizations, find out by letter or interviews the purposes of the organizations, when they meet, who may belong.
	Conduct a meeting during a class period.
4. Knowing the surrounding countryside with the help of the topographical map of your area	Make a sand-table or asbestos model of a small area. Identify the physical features.
(a) differences between small scale and topographical map	Take a hike through the countryside noting how surface features are represented on the map.
(b) information on topographical map	Make a map of one or two river basins showing how land is drained.
(c) some conventional signs	Draw a map of the delta of the Thames in Ontario. What is the nature of the soil? Is the delta a useful physical feature?
(d) finding position on a map	Investigate how the community can be improved by practical
(e) measuring distances	

	conservation measures. Discuss the responsibility of each individual.
5. Knowing the climate-making factors of the locality	Keep local observations of temperature, rainfall, wind direction, and velocity for a significant period. Collect a sequence of weather reports from the newspapers and compare with the actual weather. Study how a storm in your area was produced.
6. The founding of our community (a) first settlers (b) the region as they found it (c) reasons for change (d) social life in early days, "bees" (e) origin and meaning of the name of the community	Borrow or collect objects and pictures illustrating early life. Interview people who know the history of the community. Make a map of the routes used by the first settlers. Make a model or a mural of the pioneer settlement. Visit the clerk of the community and find out when important changes occurred. Make maps of the community at different periods showing changes in vegetation, land use, transportation, settlement. Visit places of historical interest.

Unit II How Environment Affected Our Earliest Inhabitants

Objectives

1. To understand the broader geographical features of Canada and to examine the ways in which this environment affected life in typical regions.
2. To appreciate the culture of these early inhabitants.

Topics	Suggestions
1. How the native peoples lived in forested areas	Make a map showing forests and waterways and the location of a few Indian tribes.

	Have students report what they know of Indian life from previous reading and from first-hand knowledge. Contrast the natural conditions of the area in those times with its present state by means of a picture display. Make a sand-table display of a typical area. Examine the possibility of the Indians' living differently than they did. Investigate similarities between our games and theirs. Make a collection of Indian relics.
2. How the open plain shaped its own particular pattern of living	Collect pictures which show the natural appearance of the countryside. Those who have seen the West give descriptions of it. Investigate the part played by animals in the life of these people. Read Indian legends, sing some Indian songs.
3. How a sea-coast area affected human life	Develop clear ideas regarding the nature of the country through collected pictures, film strips, slides. Map the area along the Pacific coast, showing bold physical features, location of tribes. Investigate the meaning of totem poles. Discuss materials they used, tools, equipment, and products. Visit a museum.
4. Comparison of these environments and their effects on living	Construct an asbestos map showing the broad physical features of Canada.

	Have a panel or group discussion on the relation of the physical features, climate, natural products of the three regions to the life of the people along some of these lines—food, clothing, shelter, work, crafts, division of work between men and women, travel. Have the students attempt a discovery of the ways in which members established social customs, enforced order and justice, met nature's hardships, fought wars and maintained peace.
5. The Indian as a citizen of Canada to-day (a) occupations (b) health (c) famous Indian citizens (d) reservations	Map chief reservations. Write a biography of a famous Indian leader. Collect items from newspapers. Read extracts from reports of the Department of Indian Affairs. Investigate the citizenship status of Indians.

Unit III Canada's French Canadian Community

Objectives

1. To understand the life of the people in New France.
2. To study the geography of the area and to see how the environment of the New World influenced the life of settlers from France.
3. To understand the customs introduced and the reasons for them.
4. To appreciate the lives of some of the men and women who played an important part in Canada's early life.

Topics	Suggestions
1. Descendants of New France in Canada to-day (a) French Canadians in the local community	Compare the relationship between ethnic groups in Canada with that in Switzerland, Louisiana, New England.

(b) their numbers and location in Canada and the U.S. (c) famous French Canadians of to-day	Pupils describe visits to Quebec.
2. The beginnings of the French Canadian community (a) discovery and exploration by Cartier (b) exploration and settlement by Champlain	Make maps showing routes of Cartier and Champlain. Prepare an imaginary speech by Cartier or Champlain to friends in France giving his impressions of New France, or one he might give if he returned to Canada to-day. Make a sand-table model of Quebec or the St. Lawrence valley.
3. The struggle of the community to maintain itself in the New World (a) the river, the forest, the climate (b) the Indians (c) the English and New Englanders (d) communication with France	Write a letter by a settler comparing his surroundings in New France with those in Normandy. Read stories or passages from historical novels. Compare latitude and factors affecting climate in New and Old France.
4. The life and work of the people (a) numbers (b) the habitant and the seigneur (c) priests and nuns: Laval, Marie l'Incarnation, Bréboeuf (d) government officials: Talon, Frontenac (e) soldiers: D'Iberville (f) explorers: La Salle (g) coureurs-de-bois	Make a diagram of a seigniory. Compare the system of holding land with the free-hold system. Discuss its effects. Sing French Canadian songs. Collect pictures of handicrafts, farms, churches, villages, houses. Dramatize a family scene or an important event. Pupils compare life in a French parish with their own—a discussion or an article.
5. France loses her colony	Discuss briefly the war between England and France, abroad and in Canada, using a black-

	board map. Why did some British statesmen wish to trade back Canada for Guadaloupe?
6. Britain takes a French colony within the Empire (a) problems and experiments (b) partnership, and guarantees for the French way of life: the Quebec Act	Find out why England considered the capture of Quebec so important. Prepare an imaginary conversation in which Carleton or Murray explains to a friend the problems of governing the colony. Collect information from many sources to show that the principles of the Quebec Act still operate in Canada.

Unit IV Fur Traders Open Up the North-West

Objectives

1. To learn about the daring men who first explored Canada's unknown lands.
2. To learn why the fur trade was the chief means of opening up the country.
3. To learn some of the routes used and the difficulties the fur traders faced.
4. To understand the relation of the fur industry to the physical and climatic conditions of northwestern Canada.

Topics	Suggestions
1. The founding of the Hudson's Bay Company	Discover the circumstances under which the English got a foothold in the Bay. On a map of the Bay, locate the forts and record the French attempts to dislodge them.
2. The value of the trade	Make a map showing the area and physical features of the country included in the charter. Collect pictures showing the appearance of the fur country. Study the distribution of the

		fur-bearing animals to discover any effect of climatic conditions upon the fur industry.
3.	The North West Company: a rival in the field	Compare and contrast the organization and personnel of the two companies. Make a map of the route taken by North West traders from Montreal to the West. In pictures, in drawings, or in models, set up a display of the goods traded for furs. Dramatize groups of voyageurs meeting at Grand Portage and exchanging news of east and west.
4.	The two companies in conflict	What competitive advantages were enjoyed or employed by each of the companies? Make a map of the explorers' route showing heights of land, rivers, and the location of large areas of forest, swamp, and plain. Debate the question which company contributed more to the opening up of the country. Have two groups of Northwesters, representing differences of opinion, debate the alternatives: going on in their conflict or uniting with the H.B.C.
5.	The two companies unite	Have the students attempt a drawing or a cartoon to represent the union. Discuss the probable attitude of the new H.B.C. towards settlement of the West. Investigate the present day functioning of the H.B.C. Record some of the findings on maps.

Unit V The Growth of Population and the Spread of Settlement

Objectives

1. To learn where the first settlements began.
2. To appreciate the contributions of the early settlers to Canada's development.
3. To learn why successive waves of settlers came to Canada and where they settled.
4. To appreciate and understand the many ethnic groups that comprise Canada's population.
5. To see the influence of geographic and economic factors upon the spread of settlement.

Topics	Suggestions
1. The people of Canada today (a) Compare the chief groups in the local community with those in Canada as a whole with respect to occupations, national background (b) Compare the number and location of Canada's population today with those about 1770	Make charts and maps showing distribution, density, and national origin of the Canadian people. Build up a blackboard map locating French in Quebec, Acadia; English, Scots, New Englanders, Germans in Maritimes. Students tell of relatives and friends in other parts of Canada. Students prepare family trees showing origin, date of arrival in Canada, spread of family. Make charts and graphs from statistics in Canada Year Book.
2. The people of the Maritimes and Newfoundland (a) the United Empire Loyalists (b) the clipper ship and world trade (c) lumbering, farming, coal, fish	Write a letter or prepare a speech by a Loyalist explaining why he came to Canada. Collect pictures, anecdotes, letters illustrating the Loyalist immigration. Dramatize a conversation of typical Loyalists discussing their problems.
3. The people of Quebec (a) New Englanders in Montreal	Mark the chief settlements on a map. Find buildings, farms, and

(b) Loyalists in Eastern Townships (c) the spread of French Canadian settlements	streets in the community that date from this period.
4. The people of Ontario (a) the United Empire Loyalists (b) land and immigration schemes: Talbot, Robinson, Canada Co. (c) the hungry forties: waves of immigration from Ireland, Scotland (d) free land: pioneers from the U.S.A.	Read stories and descriptions of pioneer life.
5. The slow growth of population after Confederation	Find out the growth of the U.S. after the Civil War and why many Canadians went to the U.S.
6. The people of the West (a) the métis and Selkirk (b) Laurier's national policies and the settlement of the west (c) wheat growing and ranching	Dramatize the important events in Selkirk's life. Make a speech such as an immigration agent might have given to attract Europeans and Americans to Canada. Collect pictures and news items of Ukrainian, Mennonite, and other interesting settlements. Make a poster or pamphlet such as might have been used to attract settlers.
7. The people of the Pacific Coast (a) the Vancouver Island settlement (b) the gold rush (c) immigration from the Orient (d) fishing, fruit farming, lumbering, and world trade	Read Service's poems. Collect pictures and anecdotes of the gold rush.

8. New discoveries and new industries make new communities railways, mining, oil, Marquis wheat, pulpwood	Collect articles and clippings describing new communities. Read the financial pages of daily papers.
9. Immigration after World War II.	Students find out government regulations regarding immigration, report on occupations engaged in, famous New Canadians. List arts, crafts, and skills brought from homeland to Canada by newcomers.

Unit VI Living in a Democracy

Objectives

1. To understand democracy as a way of life.
2. To understand the importance of courtesy and willingness to help others on the part of each citizen.
3. To appreciate the freedoms we enjoy.
4. To appreciate the struggles for democracy and the necessity for working to preserve and improve it.

Topics	Suggestions
1. A democratic school organization, such as council, Junior Red Cross Society	Organize the class in a democratic way to carry out some class or school duties. Discuss these aspects of such a group: delegation of responsibility, discussion and compromise, acceptance of privileges and responsibilities, necessity for intelligent voting and for continuing interest.
2. Democracy in action at one or more of these levels: local, provincial, dominion	Discuss the above aspects as they apply to the Dominion Government. Visit a session of the local, provincial, or dominion governing body.

3. Our freedoms (a) freedom of speech (b) freedom of worship (c) the right of private property (d) justice for all	Collect newspaper clippings which illustrate our possession of these freedoms. Debate the topic: A man's home is his castle. Visit a court. Follow a trial to its conclusion through newspaper reports. Read or dramatize events in Canadian history by which these freedoms were won.
4. Paying for our freedoms (a) taxes (b) voting (c) service in the armed forces	Students find out from parents and business men what taxes they pay. Study budget of local, provincial, or dominion government. Discuss: "We don't have to pay for it; the government provides it." Find the percentage that voted in a recent election.

Unit VII Our Dominion Story

Objectives

1. To learn the story of how Canada was expanded from sea to sea.
2. To learn how the obstacles were overcome.
3. To note the evidences of unselfish cooperation which made union possible.
4. To learn about some of the men who brought about Confederation.

Topics	Suggestions
1. Early British colonies	Make a map showing the British colonies of 1864. Have pupils prepare a brief report on population, prosperity, and political aims of each colony at this time. Have pupils describe the barriers and the bonds between the colonies.

2.	Problems of the early colonies	Have committees of pupils find information and discuss why most trade flowed north and south, the deadlock in the Canadian government, the fear of an attack by the U.S.A., the costly improvements needed, England's attitude to the colonies.
3.	John A. Macdonald and George Brown	Have an imaginary interview to bring out the main problems of the day. Write biographies or character sketches. Make cartoons or study Bengough's drawings.
4.	Settling differences by conferences Charlottetown Quebec	At an imaginary conference men like D'Arcy McGee, Tilley, Tupper give views of their provinces. Teacher tells the story of these conferences.
5.	From sea to sea	What made P.E.I. change her mind six years later?
	Prince Edward Island	Have a delegation from the government discuss terms with representatives of the Hudson's Bay Co.
	Rupert's Land	Make a map showing the route of the C.P.R.
	Manitoba	Prepare a short speech that John A. Macdonald might have given to persuade parliament to build the railway and a short rebuttal by a member of the opposition.
	British Columbia and the building of the C.P.R.	Until transcontinental railways were built communities set their own "sun time". Make a map to show Fleming's solution by "time belts".
	Alberta	Why did Newfoundland not

Saskatchewan	wish to join Confederation in 1867?
Newfoundland	Why was Newfoundland willing to join in 1949?
	Have pupils list some of Canada's achievements over the last 80 years.

Unit VIII The Work of the Canadian People

Objectives

1. To obtain a knowledge of the various types of work being done by Canadians.
2. To appreciate the interdependence of workers.
3. To appreciate the value of all useful work.
4. To gain an understanding of the way of life of various types of workers.
5. To develop pride in doing useful work well.

Topics	Suggestions
1. Workers in the community	Make a survey of the type of work being done by people in various parts of the community. Discuss the distribution of occupations in relation to the topographical map.
2. Farm workers of Canada	Discuss the contributions of the farmer to our daily life. Locate the chief farming areas of Canada. Consult the Canada Year Book to find the chief farm products produced. Through a panel discussion or family conversation have the class portray farm life conditions. Discuss the advantages and disadvantages of farm life. Prepare a sand-table display depicting the conservation of soil.

3. Canadian fishermen	The class is divided into committees to (i) report on fisheries in local waters, the work of local importers, distributors (ii) draw a map of Canada on the board showing the chief fishing waters and the kind of fish caught (iii) report on the cod fisheries of Newfoundland (iv) describe the work of the Department of Lands and Forests in managing the fisheries of Ontario.
4. Canadian lumbermen	Discuss the timber resources of Canada through the use of a vegetation map. Examine the timber resources of the local community with the aid of a topographical map. Read description of the forests in pioneer days. Show films and film strips on lumbering.
5. Canadian miners	Show a film illustrating miner's work. Use the map "Canada's Resources" (Department of Mines and Resources, Ottawa) to discover the principal minerals in each region. Write the "life history" of a piece of gold, copper, nickel, or iron from its removal from the mine to its use as a finished product.
6. Canadian factory workers	Have pupils examine manufactured articles in the home and find where they were made. Visit a factory, noting the interdependence of workers. Discuss working conditions. Locate the chief manufacturing cities on a map.

	Pupils discuss the chief manufactured articles of various cities. Follow through the press the development of an agreement between union and management.
7. Canadian transportation workers	Make a map showing the chief routes of the C.N.R. and C.P.R. Take imaginary trips with a truck driver through Ontario. Discuss the routes and importance of the T.C.A. Discuss a typical day in the life of one or more of these workers.

Grade VII Reference Books

For Pupils

Brown et al: *The Story of Canada.* Copp Clark.
Chafe: *Canada Your Country.* Ryerson.
Clute and Burwell: *To You the Torch.* Macmillan.
Conservation Illustrated. Canadian Nature Magazine.
Dickie: *The Great Adventure.* Dent.
Hallman: *Canadians at Work.* Longmans.
Jefferys: *Picture Gallery of Canadian History.* Ryerson.
Krug and Quillen: *Living in Our Community.* Gage.
Taylor et al: *Canada and Her Neighbours.* Ginn.

For Teachers

Brown: *Building the Canadian Nation.* Dent.
Creighton: *Dominion of the North.* Nelson.
Currie: *Economic Geography of Canada.* Macmillan.
Dorland: *Our Canada.* Copp Clark.
Lower: *From Colony to Nation.* Longmans.
Smith: *North America.* McLeod.
Taylor: *Canada.* Saunders.

Grade Eight

Canada and the Commonwealth

Unit I How Physical Environment Affects the Work of the British People

Objectives

1. To understand how geographical factors have influenced Britain's industry, trade, and place as a world power.
2. To appreciate some of Britain's present-day problems and the determination of her people to overcome them.

Topics	Suggestions
1. British products are widely used in the local community	Make a list of articles imported from Britain.
(a) the importance of manufacturing in Britain	Discuss reasons for import of articles which can be produced in Canada.
(b) the skill of her craftsmen	Make a picture display of objects which illustrate the skill of British craftsmen.
2. Physical features, resources, and climate affect the work of the people	Prepare two series of maps to show (i) physical features, temperature, rainfall, vegetation (ii) distribution of population, agriculture, and industry.
(a) in agriculture	How does the information in (i) help to explain the information in (ii)?
(b) in mining	Note influence of the North Atlantic Drift on Britain's climate.
(c) in manufacturing	Discuss reasons for England's intensive and Canada's extensive method of farming.
(d) in sources of power	Make a chart to show the nature and extent of Britain's food imports.
(e) in the distribution of population	"Britain has a large supply of a very few minerals." Discuss the importance of the minerals she possesses.

(f) in the problem of food supply	Illustrate the life of a child in a worker's family (Welsh miner, Kent farmer) by means of drawings or dramatizations.
3. Britain's island position in the world affects the work of the people	Mark convenient routes from important centres in Britain to important centres on the continent.
(a) in the fishing industry	Show the importance of the great estuaries and the tides in trade and in fishing.
(b) in trade, sea, and air transport	Account for Britain's large fishing industry. Research by committee of pupils into continental shelf, plankton, temperature of water.
(c) in ship building and aircraft industries	Pupils cut out scale outlines of continents, mount on blue background, and trace Britain's trade with other parts of the world.
(d) in providing national security	Three pupils present reasons for the importance of the navy, the army, the air force in national defence.
	Using a globe and a piece of string or a wire hoop find the shortest air routes from England to other parts of the world, i.e., by "great circle" routes. Show that Britain occupies a central position with respect to the land masses of the world.
4. The British people manage their life and resources to meet great responsibilities	Collect news items and articles dealing with Britain's economic problems.
(a) reasons for austerity programme —national security, social services, foreign trade	Interview a recent visitor to Britain.
	Discuss or dramatize the effect of these policies upon the health

(b) attempts to meet present problems—rationing, limiting imports, increasing taxes, increasing production and exports, conservation and land use (c) help afforded by the Marshall Plan.	of English children. Gather information on how closely Britain controls land use, and the part school pupils played in mapping their country.

Unit II How Different Peoples Formed One Nation

Objectives

1. To understand that such terms as Canadian, English, American when applied to nations include peoples of widely different origins.
2. To appreciate the contributions to progress made by the different peoples who formed the English nation.
3. To appreciate the varying fortunes of a country in its development from a primitive to a civilized state.

Topics	Suggestions
1. Many peoples make the Canadian nation	Review ethnic groups found in your class or community. (See Grade VII) Graphically represent the ethnic groups in Canada.
2. The early Britons lived a primitive life	Make a map of early Britain showing extent of forest and fen. Discuss causes of lack of unity among tribes. Draw pictures of the animals, tools, costumes, dwellings, and places of worship of early Britons.
3. Roman civilization comes to Britain	A pupil tells the story of Boadicea. Read account of Claudius' victory in "Claudius the God", Graves.

(a) the first battles for Britain	Write an illustrated diary or drama describing a day in a Roman official's villa.
(b) life in a province of a world empire	Make a model or diagram of a villa. Collect pictures of Roman remains, roads, walls, bridges, public buildings, pottery. Request the loan of an appropriate display from the Royal Ontario Museum, or visit the museum.
4. The Saxons and the Norse make a home in Britain	Prepare a speech made by a Saxon leader setting forth his plans for invading Britain. Investigate reasons for the success of the invaders.
(a) the German invaders	Tell some of the myths and legends that date from this period. Dramatize the coming of Augustine. Read "The Path of the King", Buchan.
(b) the Norse raiders	Mark invasion routes on a map. Make a mural of a Viking raid. Alfred the Great holds a Council of War. Discuss how settlement in the country would change the invaders' habits and outlook.
5. The Normans make England a feudal kingdom	Write a biography and character sketch of William the Conqueror. Read "Hereward the Wake", Kingsley.
(a) William's motives and methods of conquest	Discuss the similarity of the problems faced by Eisenhower and by William in their cross-channel invasions.
(b) life in a feudal kingdom	Make a plan or model of a feudal castle or village. Study a map of England noting Celtic, Roman, Germanic, and

(c) the English become a nation	Norman names. List gains and losses which resulted from the Hundred Years' War to unite England and France.

Unit III How the British People Laid Foundations for Our Social Life

Objectives

1. To understand the infuence of British social customs upon our way of life.
2. To appreciate the contribution of British standards of conduct.
3. To appreciate British achievements in the development of our religious freedom.
4. To understand that our social customs are the result of long development.

Topics	Suggestions
1. Changing conditions bring about changes in the design of houses	Discuss the influence of some of these factors upon house construction in your community: climate, available materials, local building problems, comfort and convenience, tradition.
(a) homes in your community	What styles of architecture are to be found in the houses in your community? Collect pictures of types of castles.
(b) homes for protection and shelter	Pupils draw floor plans of their own houses and compare with the plan of a manor house.
feudal castle	Trace the changing purpose and position of the hall through different periods.
home of the serf	Collect pictures to illustrate the characteristic homes of various periods.
merchant's town house	

2. Our dress reflects British influence	Discuss the appropriateness of modern clothing.
(a) modern costumes	How do geographical factors affect dress in various parts of Canada? Why do fashions change?
(b) costumes in England through the centuries	Note likenesses between present costumes and those of other periods.
3. Our provision for education profits from British experience	Discuss the types of schools attended by the people of your community. Debate the influence on pupils of the movies, radio, television. A pupil describes a day in a monastery school.
(a) education in your community	Compare a medieval and a modern library. Mark Oxford, Cambridge universities, and some famous public schools such as Eton, Harrow, on a map of England.
(b) education for the few	Read a description from a source book of life at a medieval university.
(c) education for the many	Read "Tom Brown's School Days", Dickens' description of a poor type of school in "Nicholas Nickleby". Compare the courses of study at a medieval and a modern school. Discuss reasons for compulsory education. Mark on maps the universities of Canada, England. Debate: Schooling is a greater necessity now than it was thirty years ago. Pupils correspond with pupils in an English school to compare courses, methods, buildings.

4. Our freedom of religion developed in Britain	List names and denominations of churches in the community. Why are there many denominations in Canada to-day?
(a) church life in the community	Draw a chart to show the relationship between officials of the Catholic church.
(b) the people attend one church the Roman Catholic Church organization religious orders activities in education, charity, farming, justice cathedrals and abbeys	Make a drawing or model of a 13th century monastery, indicating the uses of the various parts. Mark on a map of England six famous religious centres. Read a description from a source book of life in a medieval monastery. Study coloured reproductions of medieval manuscripts, stained glass windows.
(c) the people attend several churches the establishment of the Church of England other Protestant groups	Account for the "separation of church and state" in Canada. Read selections from Wesley's diary. Explain the appeal of the Methodists to large sections of the British people.
(d) religious revival brings reform	Pupils report on the home and foreign missionary work engaged in by their churches.
(e) the spread of Christian work missions	Discuss the influence of Christian ideals upon social service work in your community.
5. British sports and sportsmanship contribute to Canadian life	To what extent does the nature of your locality determine the sports engaged in? Debate the value of the growing interest in sports by spectators, through the press, radio, and TV.
(a) in your community	What is meant by "Sport for sport's sake"? Read the descriptions of a tournament and an archery contest in "Ivanhoe".

(b) famous English sports and amusements	Describe or draw pictures of jousting, boar hunting, hawking, archery, bull baiting, fox hunting. Compare the influence of English and American customs on Canadian sports.

Unit IV How the British People Laid Foundations for Our Democratic Way of Life

Objectives

(1) To promote an appreciation of the long struggle to evolve parliamentary government.

(2) To promote an understanding and appreciation of democracy.

(3) To encourage pupils to assume their responsibilities as democratic citizens.

Topics	Suggestions
1. Canadian democracy is a heritage from Britain	Visit a local council meeting. Discuss aspects of our federal government such as delegation of authority, discussion and compromise, party system, free vote. Avoid a detailed study of the machinery of government. Prepare a panel discussion on "Keeping and Extending our Democracy". Read "Let's Do Better", Munro Leaf. Have short talks prepared on "Good Citizens I Have Known". Have pupils list evils which interfere with the effective operation of democracy, e.g., special privileges, discrimination.
2. A king rules the people	Discuss the causes of the quarrel between John and his advisers. Pupils plan terms of the charter which they would submit to

(a) abuses of the period	King John without previous reference to the charter. Pupils check their draft with actual terms of charter.
(b) Magna Carta	Dramatize a scene showing King John signing Magna Carta. Commence a time chart showing the developments in democratic government.
3. The King takes advisers	Describe the meeting of the nobles and the clergy with the middle class in the first Parliament.
(a) De Montfort summons a parliament	Edward I said, "What affects all should be approved by all". Discuss this statement.
(b) Edward I's Model Parliament	
4. The people battle the king	Have two pupils represent Charles and a member of Parliament in a discussion of "The Divine Right of Kings".
(a) The Divine Right of Kings	Dramatize the submission of the Petition of Right to Charles.
(b) Charles signs the Petition of Right	Have a pupil represent Sir John Eliot and prepare a speech criticizing Charles I.
(c) Sir John Eliot fights for freedom of speech	Stress the intent of the people to retain or gain power but avoid a detailed study of the period.
(d) Cromwell rules without a king	
5. The people rule themselves	What terms of Magna Carta did Charles flout?
(a) William III and the Bill of Rights	Discuss the strengths and weaknesses of the two party system.
(b) two parties appear	Why was the office of Prime Minister introduced in the reign of George I?
(c) a prime minister assumes important duties	
(d) John Wilkes helps gain freedom of the press	
6. More people get the vote	Avoid a detailed study of the reform bills but stress the continuity of the extension of the

(a) manufacturers and well-to-do	franchise. Have a committe report on the reason for the "rotten boroughs".
(b) town workmen	Make a concentric graph showing the gradual expansion of the franchise.
(c) farm labourers	Have committees find out when various groups obtained the right to vote.
(d) vote by secret ballot	Ask a Deputy Returning Officer to describe his duties on election day.
(e) franchise for women	Collect figures to show the percentage of voters using their franchise in local, provincial, and federal elections.

Unit V How Britain Laid the Foundation for Modern Industry

Objectives

1. To appreciate Britain's contribution to the world in developing modern industry, transportation, and communication.
2. To understand the dependence of one occupation or industry upon others.
3. To recognize the increasing interdependence of nations.
4. To become aware of the social problems which arise from industrialization.

Topics	Suggestions
1. Local workers employ varying degrees of mechanization	List some products of your community which may be classed as (i) hand products (ii) machine products (iii) a combination of both.
2. The craftsman works in the shop and home	List family names such as Mason, Cooper, which can be traced back to occupations.
(a) the craft guilds	Committees prepare illustrated reports on the apprenticeship system in two or three trades. Collect pictures of guild halls

(b) domestic or "putting out" system	and guild uniforms. Dramatize complaints of a merchant about goods.
3. The worker goes to the factory	Collect pictures of early inventions in spinning and weaving. James Watt reviews the revolution brought about by his steam engine.
(a) changes in machinery	A weaver contrasts factory life with his early life under the domestic system.
(b) changes in employment	Mark on a map industrial areas which are the result of the industrial revolution. Read passages from "The Deserted Village", Goldsmith.
(c) changes in living conditions	Contrast the life of a child in an English village with life in an industrial town. List improvements that have been made in factory and home conditions of the worker of to-day.
4. The farmer improves his methods	A committee makes a model of a farm operated under the three-field system.
(a) soil management	Collect pictures or make sketches of early and modern farm tools and implements.
(b) implements	Interview an agriculturalist to determine improvements in British livestock in recent years.
(c) livestock	List new crops grown during the last century. Outline ways in which Britain has increased her food supply since the beginning of World War II.
5. The British improve transportation and communication	Make a mural showing improvements in transportation. Link improvements with the changing industrial conditions,

	e.g., canal building and coal mining, merchant marine and world trade. Read Dickens' "Tale of Two Cities" for description of travel by coach.
(a) roads and bridges, canals, steamships, railways, motor vehicles, airplanes	Have pupils present short biographical sketches or imaginary radio interviews about such men as Macadam, Brindley, Stephenson. Mark on an outline map the main trunk lines connecting main industrial and commercial centres. Relate these routes to a contour map of the British Isles. Note like effects in a contour map of your country.
(b) penny postage, telegraph, telephone, wireless, T.V.	Discuss the problem of collecting postage before introduction of the postage stamp. Make a display of old postage stamps. Show that developments in transportation and communication are the results of the efforts of scientists and inventors of many different countries.
(c) the shrinking world	On outline maps of the world locate major sea and air routes radiating from Great Britain. Write a log of a sailing vessel, of a steamship, of an airplane travelling from London to Calcutta. How are international relations changed because of the steady reduction of time and space by modern communication and transportation?

Unit VI How the People of Australia and New Zealand Live To-day as Nations within the Commonwealth

Objectives

1. To appreciate the variety of places, peoples, and societies within the Commonwealth.
2. To understand how the British people developed different ways of living in different regions.
3. To appreciate the common heritage and interdependence of the different members of the Commonwealth.

Topics	Suggestions
1. The Empire and Commonwealth include many races and regions	Colour in parts of the Empire and Commonwealth on a map of the world. Note size, location, races of each part. Present a pageant in which representatives of members of the Commonwealth tell about their daily lives.
2. A British people live on the island continent of Australia	A pupil tells the story of Captain Cook. Explain the late discovery of the continent. Discuss the British policy of exiling convicts. Why were the first settlers sent to Sydney instead of to America? Dramatize the landing of Arthur Phillips at Sydney.
(a) the British start a settlement in a land remote from neighbours	Compare the discovery of gold as an influence upon settlement in Australia and in California. Using a globe and a tape measure, show the position of Australia with respect to Canada, New Zealand, New Guinea, China, and Japan. Compare the relative size of Australia and Canada by superimposing one map on another

	of the same scale.
(b) Australians live in a land of distinctive physical features, climate, and vegetation	Have pupils mark on a map the physical features of Australia. Pupils then check their knowledge by a study of relief and surface maps in atlas. Draw a cross section of Australia, west to east along latitude 30°. Indicate decreasing rainfall from ocean to desert. By attaching paper arrows to a globe, indicate westerly, S.E. trade, and monsoon winds. Using a globe, demonstrate the cause of seasons and the concurrent shift of the wind systems. Draw diagrams of the trade winds and westerlies at the four seasons of the year. Pupils prepare a series of large coloured maps to show relief, temperature, rainfall, vegetation, and distribution of population. Use these maps to solve the following problems: (i) Why is Central Australia a desert? (ii) Why is S.W. Australia a fertile area? A committee prepares a series of pictures to show types of vegetation in Australia and Canada. From a study of these maps what crops would you expect to find in (i) Queensland? (ii) New South Wales?
(c) life in Australia and Canada displays similarities and differences	Have a committee investigate (i) the importance of sheep farming (ii) cattle farming (iii) artesian water supply (iv) effect of over-grazing. Compare population maps of Australia and Canada. Discuss

		reasons for the distribution of population. Introduce maps of equal-area projection where area is a factor in the comparison. Account for the fact that one-third of the Australian population live in two cities. Compare with concentrations of population in Canada. Contrast the speech of an Australian and a Canadian. Make maps to show wheat-growing areas and wheat production in both countries. Committees report on the importance of wheat to each country. Trace on an outline map of the world the export routes from each country. Two pupils make brief reports on the Forest Indians of Ontario and the aborigines of Australia. Contrast the time of harvest in Australia and Canada. How would an Australian school boy celebrate Christmas? Show the film "Australia Today." Contrast the immigration policies of Canada and Australia. Debate the relative prospects of the two countries.
3.	A British people live on the remote island of New Zealand	Describe early whaling and sealing posts. Tell the story of the founding of the colonies. Collect pictures and make drawings to show the arts and crafts and the appearance of the Maoris. Compare their arts and crafts with those of the Coast Indians of British Columbia.

(a) New Zealanders of 1850 four colonies an interesting native people (b) New Zealanders of to-day the effect of physical features, position, and climate upon agriculture ranching trade sources of power economic and social life	What part do the Maoris play in the life of New Zealand to-day? Compare the political status of the Maori and the Canadian Indian. Prepare surface, temperature, rainfall, and vegetation maps of New Zealand and relate these one to another. How does the information on these maps help to account for the distribution of population, industries, and occupations? Pupils prepare illustrated talks on different phases of the pastoral and fruit industries. Discuss the influence of refrigeration ships and canning methods upon the prosperity of New Zealand. Pupils' committees investigate what crops and animals the British found in the island and what new ones they introduced. Committees investigate the standard of living, educational and social legislation in New Zealand. Discuss reasons for progress in these fields. Debate the advantages and disadvantages of living in New Zealand.

Unit VII How the Peoples of India, Pakistan, and South Africa Live To-day as Nations Within the Commonwealth

Objectives

1. To recognize that a common humanity exists despite differences of custom, race, and religion.
2. To recognize that ways of living different from our own are not necessarily inferior.

3. To appreciate some of the achievements and problems of other members of the Commonwealth.

Topics	Suggestions
1. Europeans become established in India	Make a study of the origins of the native peoples of India and of their cultures at the time of the coming of the Europeans. Mark on a map of the world the routes and centres for trade with India established by the Portuguese, Dutch, French, and English. Two pupils prepare talks on the East India Company, Robert Clive, growth of English control. Discuss the causes and significance of the loss of monopolies by such trading companies as the East India Company and the Hudson's Bay Company.
2. Physical and climatic conditions influence the life of the people	Superimpose a map of India upon a map of Canada in the same scale. From map studies pupils explain the chief crops in different regions, such as tea in Assam, rice in the Ganges valley, jute in the Ganges delta, cotton in the Deccan. Describe with the aid of pictures the cultivation of these crops. A committee investigates the use of modern methods of agriculture in India. Some pupils make a study of deltas, their formation and nature. Using a relief map explain why a native of Indore could go either north or south to escape the summer heat. Using rainfall, wind, and contour maps, pupils explain (i)

	the uneven rainfall ((ii) the monsoons and their influence upon the life of the people. Pupils report on the irrigation systems and the Colombo plan of extending them.
3. Density of population influences the life of the people	Make charts to compare the populations of India, China, Russia, Japan, North America, Europe. Compare the life expectancy in India with that in Canada and other parts of the Commonwealth. Discuss the influence upon the standard of living of (i) density of population (ii) diet (iii) crop yield per acre.
in villages	A pupil reports on the importance of the work in India of the Food and Agricultural Organization of the U. N. Make a drawing or a model of a typical village. A pupil describes the life of an Indian of his own age to illustrate village life. Make a series of drawings or pictures to show characteristic activities such as family life, worship, travel, farming, amusements (i) in India (ii) in Canada. Read passages from "Kim", Kipling.
in cities	Mark on a map some of the great cities of India. Committees investigate the development and present importance of each.
4. Hinduism and Mohammedanism influence the life of the people	Two pupils, one representing a Hindu and the other a Moslem, explain their religious outlook. Make a chart and a map to

	show numbers and locations of Hindus and Moslems. Use these maps to help explain the separation of India and Pakistan and their boundaries. Draw a Hindu temple and a Moslem mosque. Read passages from books describing (i) festivals (ii) pilgrimages (iii) sacred cities. Dramatize a simple myth or legend. Read some poems by Tagore.
5. India and Pakistan gain independence	Determine how India became a republic within the Commonwealth. Write brief biographies of Ghandi, Nehru, Jinnah. A British governor or an Indian nationalist discusses Britain's contribution to (i) unity and independence (ii) education (iii) railways (iv) law and organization (v) trade and industrialism. A pupil investigates and reports on the work of High Comissioners for India and Pakistan in Canada. Make a chart to show the volume of India's trade with Canada, Britain, the U.S.A. Read passages from addresses by representatives at meetings of the U. N. and the Commonwealth. Pupils report on Indians in other parts of the Empire — Trinidad, South Africa, Ceylon. What Canadian immigration laws apply to people from India?

6. Europeans, Asiatics, and natives in South Africa	Two pupils report on the first Dutch and the first English settlements. Read passages from books describing the Great Trek, 1836.
(a) Europeans gain control	Three pupils present the views of Kruger, Cecil Rhodes, and Smuts upon the future of South Africa. Draw a political map of the Union of South Africa. A pupil displays stamps of South Africa.
(b) physical features influence the life of the people	Draw or make a cross section of South Africa at latitude 30°S. Prepare surface, temperature, rainfall, population, and occupation maps. Why do most white people live in the south east? What region of Canada resembles the veldt? How is the occupation map explained by the others? Read some descriptive poems by Roy Campbell.
(c) the people develop industries and resources	Locate the chief gold and diamond mines on a map. Compare with population and railway maps. Committees prepare a series of talks illustrated by pictures describing the life of a native miner, a Boer sheep or cattle rancher, a Kaffir or Bantu or Zulu villager. Committees report on (i) manufacturing industries in South Africa (ii) difficulties of manufacture (iii) exports (iv) imports.
(d) social and racial differences present problems	Make charts to show the ethnic groups in the population. A committee reports on South African segregation laws. Class

discusses methods of dealing with the racial problem.
Compare Canada and South Africa with respect to (i) official languages (ii) racial problems (iii) importance of gold to the country.

Grade VIII Reference Books

For Pupils

Anstey: *The British People.* Gage.
Atwood and Thomas: *Nations Overseas.* Ginn.
Bradley: *World Geography.* Ginn.
Daniher: *England, the Empire and Commonwealth.* Copp Clark.
Gill and Baird: *The Story of the British People.* Dent.
Gordon: *The House of History.* Nelson.
Hepburn et al: *Africa, Australasia, and the British Isles.* Longmans.
Quennell: *A History of Everyday Things in England.* Clarke, Irwin.
Rogers et al: *Canada in the World Today.* Clarke, Irwin.
Ward: *From Serf to Citizen.* Ryerson.

For Teachers

Feiling: *A History of England.* Macmillan.
Mitchell and Leys: *A History of the English People.* Longmans.
Trevelyan: *English Social History.* Longmans.
Williams-Ellis and Fisher: *The Story of English Life.* Longmans.

Grade Nine
Canada and the Americas

Unit I How the Diverse Peoples of North and South America Are Linked by Common Interests

Objectives

1. To appreciate the differences existing among the peoples of American countries.
2. To recognize their expanding common interests.

Topics	Suggestions
1. People of the Americas differ	Make a language map of North and South America.

	Contrast with a language map of Europe.
(a) in language	Committees report on differences in dress, amusements, music. Play records of South American music.
(b) in ways of living	Draw or collect pictures to illustrate characteristic customs of different countries.
(c) in political practice	Pupils make brief reports on the different types of government in Uruguay, Brazil, Argentina, Mexico, Chile. Discuss reasons for the prevalence of revolutions in the political life of Latin American countries.
2. People of the Americas have much in common through	Find examples of permanent movements of people (i) from Canada into the U. S. A. (ii) from the U. S. A. into Canada (iii) from Latin America into the U. S. A.
(a) movements of population	Compare the number of people of French Canadian descent in Quebec with the number in the U. S. A. Why is Spanish more widely studied in Canada now than in former years?
(b) travel and communication	Make a map showing the air, land, and water routes linking the Americas. A committee arranges a display of tourist literature. Investigate the extent of the interchange of students, professors, engineers, and executives.
(c) trade	Consult the Canada Year Book to discover the volume and type of trade between (i) Canada and the U. S. A. (ii) Canada

	and Latin American countries. Make a chart or map to show how the products of Canada in the temperate zone are complementary to the products of Brazil in the tropical zone.
(d) defence	Study the globe to discover common problems of defence. List countries of the Americas which are members of the United Nations.

Unit II How Different European Peoples Occupied Different Parts of the Americas and Founded New Nations

Objectives

1. To understand why Europeans became inhabitants of the Americas.
2. To learn how European nations occupied different parts of the Americas.
3. To appreciate the different types of culture which developed.

Topics	Suggestions
1. Europeans turn south and and west for the wealth of the East	On a map of the world as it was known about 1400 mark (i) Europe's trade routes with the East (ii) the extent of Turkey's conquests by 1453.
(a) the blocking of familiar trade routes	Discuss the effect of the conquest upon (i) Venice and Genoa (ii) Spain and Portugal.
(b) navigators seek new routes and find new continents	Committee investigates and reports on the importance to navigation of the mariner's compass, the astrolobe, the sailing ship. Draw an outline map of the world as it was known in 1490. Add only the routes and the areas discovered by such navigators as Diaz, Columbus, Da Gama, Cabral, Magellan.

2. The race for wealth and empire begins	How did the Pope's decree of 1494 dividing the world between Portugal and Spain influence the development of the New World?
(a) the lure of the Spanish Main	Make a picture map of the Spanish Main to show climate, physical features, vegetation, products, and resources important to Europe.
(b) rivals in the race	On a map of North and South America mark the possessions of Portugal, Spain, France, England, and Holland about 1600.
(c) England—a new mistress of the seas	Read stories and poems about the exploits of English "sea-dogs" and the defeat of the Spanish Armada. How did the rise of English sea power affect the course of events in the Americas?
(d) the continuing search for sea routes to the East	Read passages from source books describing voyages of Drake and other navigators. On a map of the north polar region mark the routes of such northern explorers as Davis, Frobisher, Chancellor, Hudson, Franklin, Amundsen.
3. Spaniards take the wealth of Central and South America	Two committees prepare talks illustrated by drawings or pictures describing the civilizations of the Aztecs and Incas. Write biographies of Cortes and Pizarro.
(a) the conquest of native civilization	Account for the conquest of Mexico and Peru by a small number of Spaniards. Mark the chief centres of Spanish influence and account for the location and special importance of each.

	(b) an old civilization takes root in the tropics	Collect pictures or make drawings of old Spanish homes, churches. A Spanish governor reports on his administration of New Spain, or a Jesuit missionary describes his work among the Indians.
4.	Frenchmen seek fur and empire through the inland waterways	Make a map showing English, Spanish, and French possessions in North America in 1713. A French officer explains the strategic importance of Louisburg, Quebec, Duquesne, New Orleans. A habitant and a coureurs-de-bois argue the best way of ensuring the prosperity of New France.
5.	Englishmen make new homes along the Atlantic seaboard	Read "The Mayflower Compact". Write diaries or letters describing life in Puritan Massachusetts, Quaker Pennsylvania, Roman Catholic Maryland. A plantation owner describes and defends his use of slave labour in Virginia or the Bahamas. A British colonial secretary points out the advantages to colonials of the Navigation Act. "A new world modifies old customs". Discuss. Collect pictures which illustrate the similarity between towns in England and New England.
6.	The Thirteen Colonies form a new nation	Compare sailing time between Plymouth and Boston in 1900 and to-day. Show how pioneer life in the new colonies stimulated a spirit

	(a) influences that weakened home ties	of independence. Two pupils representing members in the British Parliament debate the issue raised by the Stamp Act.
	(b) blunders made by the Mother Country	Dramatize a meeting of Bostonians to discuss an attack on the ten ships in the harbour. "The separation of the Thirteen Colonies from Great Britain was inevitable". Debate.
	(c) Canada's neighbour sets up a new nation	Discuss the opening sentences of the Declaration of Independence. Prepare reports on Bunker's Hill, Saratoga, and Yorktown. A French Canadian seigneur gives his arguments against joining the invading Americans. Collect pictures and cartoons of colonial life. Write a biographical sketch of George Washington. On a map mark the boundaries between the new nation and her neighbours. Show how Canada profited as a result of the treatment of those who remained loyal to Britain.
7.	Latin America follows the path of the United States	List reasons for Spain's decline as an empire builder. Pupils prepare biographical sketches of Miranda and Bolivar. On a political map of Latin America mark in the dates when independence was won. The story of Brazil (i) as a kingdom (ii) as a republic.

Unit III How the American People Occupied Half a Continent and Preserved Their Unity

Objectives

1. To learn the story of the expansion of American settlement to the Pacific coast.
2. To appreciate the effect of environment on this settlement.
3. To understand how sectional interests were finally reconciled to achieve a union.
4. To recognize the contributions of many peoples in the formation of a strong united nation.

Topics	Suggestions
1. The American people build one of the great nations of the world	Make a chart and a map to contrast (i) the population of the United States in 1776 and to-day (ii) the extent of the United States in 1776 and to-day. Discuss the high standard of living of the American people. Consider the difficulties of adhering to the democratic system in a country of such vastness and diversity of population.
2. The American people overcome barriers in their westward expansion	On a map mark in (i) the boundaries of the United States in 1783 (ii) her neighbours (iii) routes through the Appalachians (iv) extent of settlement beyond the Appalachians by 1783.
(a) to the Mississippi	Prepare a series of large maps showing surface, climate, and vegetation of the United States. Make use of these in the discussion of the successive steps in American expansion to the Pacific. Daniel Boone tells why he loves the life of the frontier.
(b) to the Pacific	Mark on a map (i) the Louisiana Purchase (ii) the boundary

		settlement of 1818 (iii) the Florida purchase (iv) the routes
	Louisiana Purchase	of Lewis and Clarke, Pike.
		Collect pictures to show the difference between the obstacles to be overcome by settlers in forested areas and on the prairies.
		"The frontier made a new type of man". Discuss.
		List or make drawings of the contents and equipment of a covered wagon.
	Mexican War	Committees do research to discover the route, time, and distance from New York to San Francisco by land and by sea in 1845.
		What ambitions brought Americans into this area?
		Mark on a map acquisitions made by (i) the admission of Texas (ii) the Mexican cession (iii) the Oregon Treaty.
	the rush for gold and silver	With the cooperation of the local library make a classroom display of books dealing with the story of exploration and settlement in the American West.
		Locate the chief centres of settlement in the area west of the Mississippi and account for the location and importance of each.
3.	The people preserve their union	Examine a cotton ball for size, fibres, seeds.
		Show how Whitney's cotton gin increased the demand for slaves.
		"In the South cotton was king". Explain.
		On a map mark free and slave soil in 1800, in 1860.

	How did the underground railway operate? Why was Windsor a terminal? Dramatize a slave auction scene. Lincoln and Lee present their views on states' rights. Collect pictures relating to Lincoln. Read the Gettysburg address. Discuss the effect of the American Civil War in hastening Canadian Confederation.
4. Many different peoples become citizens of the United States	Using a line graph plot the rate of immigration into the United States since the Civil War. Similarly represent immigration from (i) Europe (ii) Canada. Account for the significant change in sources of European immigration between 1880-90. Explain the "quota system" governing immigration. Illustrate by means of a circle graph the ethnic groups in the American population. Hold a panel discussion to show the effect of such influences as the following on the Americanization of immigrants: (i) the educational system (ii) admiration of material success (iii) living under a free system of government.

Unit IV The Physical Features, Climate, and Vegetation of North America Affect the Work of the American and Canadian Peoples

Objectives

1. To see how the environment has affected farming, fishing, and lumbering occupations in North America.
2. To appreciate the worth of resources in the soil, forest, and waters of North America.

3. To see with what measure of wisdom the people have used nature's gifts

Topics	Suggestions
1. The physical features of the continent affect the work of Canadians and Americans	Working in groups, investigate and report using sketch maps and pictures (i) the position of mountain systems, their age, structure, their suitability for settlement and occupations (ii) the extent and influence of the Laurentian Shield (iii) the location of lowlands, their origin and formation, their suitability for settlement and occupations. Draw profiles or cross sections of the continent in two or three places. Compare extent of highland areas of United States and Canada, of lowland areas, and the effects of these conditions on transportation, occupations, and distribution of population. Discuss how rivers affected the development of the continent.
2. The climate, soil, and vegetation of the continent affect the work of Canadians and Americans	Study temperature, rainfall, and vegetation maps, noting (i) the influence of temperature and rainfall upon vegetation (ii) temperature zones of the continent (iii) length of the frost-free growing period in each zone (iv) the importance of particular isotherms and isohyets with respect to growing crops, transportation. Make a soil map of Ontario. Show film illustrating methods of soil conservation. Collect pictures to illustrate the natural vegetation areas of North America.

3. Americans and Canadians obtain a wide variety of products	Show a film on forest conservation. Make a planned visit to a lumber yard. Investigate the importance of the pulp and paper industry to Canada.
(a) from the forests	Read passages from Report of the Select Commitee on Conservation, 1950, King's Printer, Queen's Park, Toronto.
(b) from the soil	Committees prepare illustrated reports on (i) mixed farming on Atlantic coast (ii) cotton belt (iii) corn belt (iv) ranching areas for beef cattle and sheep (v) fruit growing areas, stressing climate and soil of the region, working conditions, methods of production and distribution, importance in the national economy, soil depletion, and methods of conservation.
(c) from the sea	Map the main ocean and inland fishing grounds, showing continental shelves and banks. Investigate importance of game fishing in tourism and manufacturing. Make a list of important products obtained from the sea.

Unit V Americans and Canadians Build Modern Industrial Nations in North America

Objectives

1. To appreciate the vast resources and economic strength of the U. S. A. and Canada.
2. To gain an understanding of modern American and Canadian industry.

Topics	Suggestions
1. Americans and Canadians develop their mineral resources	Make a map of the coal and iron deposits of United States and Canada.

	Read descriptions, collect pictures, draw diagrams to show methods of coal mining and of iron mining.
(a) coal and iron	By means of maps or diagrams, show how coal, iron ore and limestone have been brought together in smelting and steel centres. A committee makes a special study of steel alloys, the other minerals used as alloys, and the special qualities and uses of the products. Make a list or a graph showing the industries which are the heaviest users of steel.
(b) precious metals and useful minerals	Committee prepares a poster showing the uses of metal in daily life. Committee leads a panel discussion on the life of a miner: working conditions, social life, unions. To what extent is Canada dependent upon the American steel industry? In this connection discuss the importance of the St. Lawrence River Project. Make a check-chart for each country to show whether the supply of important metals in each country is scarce, sufficient, surplus.
2. A combination of factors leads to large scale production	Make a diagram to show the many uses and products of coal. Make a map study of the gas and oil fields of United States and Canada.
(a) supplies of power	Make a map to show how common sources of power, such as oil, coal, hydro make Canada and the U. S. A. interdependent.

	Panel discusses the influence of personal freedom and universal education in producing a skilled labour force.
(b) skilled labour force	Make a chart to show the reduction in the number of man-hours required to produce a common article of manufacture from 1850 to to-day.
	Draw a diagram to show the many products of petroleum.
(c) inventions, research, and machinery	Committee prepares a letter to firms requesting information on the importance of inventions, research, and special machines in its industry.
	Pupils report on the contributions of such men as Goodyear, Ford, Edison, Remington, Bell, Whitney, McCormick.
	Make a carefully planned visit to a local industry.
	Make a list of the uses of electricity.
	Using pictures or diagrams, give an illustrated talk on one or more of the great power developments—Grand Coulee, Queenston, Boulder Dam, Shipshaw, St. Lawrence Project.
(d) efficient transportation	By maps, diagrams, and pictures show how industry has made use of the transportation advantages of the Great Lakes system.
	Study railway maps of North America in 1870, 1890, to-day.
	Panel discusses the special advantages of rail, highway, water, and air transportation in the U. S. A. and Canada.
	Mark on a map the chief manufacturing centres. Explain the concentration.

3.	The U. S. A. and Canada become leading industrial nations	Make bar graphs to compare the steel production, hydro consumption, car loadings in different countries. Make line graphs to show the increasing production of steel in North America between 1850 and the present. Committees study one or two of the following industries, investigating American and Canadian relations: (i) farm machinery (ii) flour milling (iii) aircraft (iv) radio (v) copper refining (vi) aluminum (vii) cotton and rayon (viii) chemicals (ix) household appliances (x) newsprint. Make a check-chart for Canada and the U. S. A. showing what important products and commodities are in short, sufficient, and surplus supply. A committee reports on the influence of modern means of communication upon business and social life. Discuss the methods and importance of modern advertising. Discuss: How well do North Americans live?

Unit VI The People of Latin America Develop Their Resources and a Distinctive Culture

Objectives

1. To gain a knowledge of those factors in the physical environment of Latin America which are significant in shaping the activities of the people.
2. To gain an appreciation of the extent of our dependence upon Latin America.

Topics	Suggestions
1. Latin Americans and Canadians exchange products	Using the Canada Year Book, list imports from Latin American countries. On an outline map, mark production areas for these products. List the products sent by Canada in exchange.
2. Many factors affect the distribution and work of the people	Study maps showing physical features, temperatures, winds, rainfall. Discuss the significance of these factors in determining distribution of population. Account for the occurrence of savannahs in South America. Explain why the bulk of the population of the west coast of South America is found in the high Andes.
(a) physical features	Account for desert areas in Chile, selvas of the Amazon, pampas of Argentine. Explain how government policy has contributed to the preservation of nitrate deposits of Chile and to the guano deposits on the islands of Peru.
(b) climate and vegetation	Locate forested areas and discuss the limited development of forest products. Explain the location of the major farming, processing, and ranching areas, and the seaports through which the products are exported.
(c) natural resources of forest, farm, and mine	Committees prepare reports on the power and mineral resources and manufacturing of Latin America. Account for the small number of populated areas in the interior of South America.

3. Latin Americans develop industries	Committees prepare maps, charts, pictorial displays on such topics as: (i) coffee growing in Brazil (ii) mining in Chile (iii) meat packing in Argentina (iv) raw sugar from West Indies (v) raw rubber from the Amazon (vi) oil production in Mexico (vii) wheat growing in Argentina. Investigate how wisely South Americans have used their natural resources.
4. Latin Americans develop a distinctive culture	Committees collect pictures and passages from interesting books, and prepare reports describing the life of three or four Latin Americans such as: (i) a ranch owner in Argentine (ii) a mine worker in Bolivia (iii) a coffee exporter in Sao Paulo (iv) a Mexican farm labourer. These reports should deal with some of the following—homes, possessions, food, clothing, education, amusements, arts and crafts, literature, political outlook. Discuss the influence upon Latin American life of the Spanish heritage, the Roman Catholic Church, American and English manufactured products, music festivals.

Unit VII Neighbours in Peace and War

Objectives

1. To realize that unfriendliness is born of selfishness and lack of understanding.
2. To understand that neighbours can live at peace once they achieve respect for one another.

Topics	Suggestions
1. Relations between the peoples of the U. S. A. and South America	Discuss the extent to which the creation and early enforcement of the Monroe Doctrine were the result of cooperative action between Great Britain and the United States.
(a) The Monroe Doctrine brings security from European interference	Point out the advantages of the Doctrine to the United States and to Latin America. Investigate the extent of the investment of American capital in Latin America. Debate the justice of measures taken by the American government to protect American investments in Latin American countries.
(b) Latin American countries fear domination by the United States	Discuss the effect of the Spanish-American War on the relations between the United States and Latin America. Make a report on the methods adopted by the United States to get control of the Panama Canal zone.
(c) the U.S.A. adopts the "good neighbour policy"	A committee reports on the application of this policy in (i) Nicaragua (ii) Mexico (iii) other places. Discuss the measure of success of the policy in spite of obstacles to this relationship. Investigate the origin, purpose, and influence of the Pan American Union.
2. Relations between the peoples of the U.S.A. and Canada	American colonists discuss their motives for invading Canada during their war of Independence. An officer reports significant details of the invasion.

(a)	neighbours in conflict	A seigneur and a church leader explain their reasons for not supporting Montgomery.
	American War of Independence	Benjamin Franklin reports the failure of his efforts to win over the Canadians.
	War of 1812	General Brock and General Hull address their respective troops on the purpose of the War of 1812.
		Discuss the Rush-Bagot Treaty of 1818 as evidence of improving relations.
	Fenian Raids	Investigate the background, motives, and acts of the Fenians in 1866 to discover the extent of American public support.
		A Loyalist from St. John and a Yankee of Boston debate the settlement of the Maine boundary.
(b)	neighbours negotiating through the British colonial office	A committee reports on the British and American rival claims to the Oregon Territory.
		Committees investigate and report on the effects of reciprocity and its later cancellation upon (i) Canadian prosperity (ii) Confederation.
		Investigate how fisheries negotiations were handled and with what results.
		Discuss the strained relations between Canada and the United States over the Alaskan Boundary settlement.
(c)	neighbours negotiating as equals	A committee reports on the organization, powers, and achievements of the International Joint Commission.
		Describe the operation of the Joint Defence Board in World War II.

Discuss examples of standardization of military equipment, training methods, joint use of air bases at the present time.
Illustrate common economic interests from an examination of stocks listed on the New York and Toronto exchanges.
List memorials on the international border to commemorate the long period of unbroken peace.
Locate fortifications which have become tourist attractions.

Grade IX Reference Books

For Pupils

Atwood: *The United States in the Western World.* Ginn.
Bradley: *World Geography.* Ginn.
Brown et al: *Our Latin American Neighbours.* Nelson.
Canfield and Wilder: *The Making of Modern America.* Allen.
Cutright et al: *Latin America.* Macmillan.
Kimble et al: *North and South America.* Longmans.
McConnell: *Geography of the Americas.* Gage.
Muzzey: *A History of Our Country.* Ginn.
Packard et al: *Geography of the World.* Macmillan.
Rogers et al: *Canada in the World Today.* Clarke, Irwin.
Thralls: *The World, its Lands and Peoples.* Gage.
Webb et al: *The New World.* Gage.
Wielder et al: *This is America's Story.* Nelson.

For Teachers

Inman and Castenada: *A History of Latin America.* Macmillan.
James: *Latin America.* Odyssey.
Hockett and Schlesinger: *Land of the Free.* Macmillan.
White and Foscue: *Geography of Anglo-America.* Copp Clark.

Unit I Canadians Are a People with World-Wide Interests and Influence

Objectives

1. To show that Canada plays an important role in world affairs today.
2. To gain an appreciation of the extent to which the interests of Canadians are closely linked with the interests of people in other countries.

Topics	Suggestions
1. Canadians officially represent their country abroad	On a map of the world mark the countries in which Canada has diplomatic representatives. What duties and services are performed by these representatives: ambassador, high commissioner, consul?
2. Canadians engage in enterprises throughout the world	Investigate and report on such topics as (i) Canadians assist with the organization of education in Ethopia (ii) Canadian mining engineers extend fortifications on Gibraltar.
(a) as technical and educational advisers	Have a pupil report on the work of the branches of Canadian banks and insurance companies in foreign lands. Investigate Canadian oil interests abroad. Students make a survey of Canadian industries with subsidiaries in other countries.
(b) as business representatives	A pupil representative of each denomination finds out the countries in which his church has established foreign missions. Have a pupil report on the services given by a missionary or nurse in a foreign country.

(c) through participation in foreign industries and services	Discuss the work being done by Canadians in the public utilities in Brazil. Discover to what extent Canadian ships carry goods throughout the world. Examine a map showing air routes. Note that Canada is at the crossroads of world airways.
(d) through service in the armed forces	Make a form survey to find out those who have relatives or friends who served overseas in World War II or are in the Permanent Force. Indicate on a map of the world the countries in which Canadian men and women saw service in World Wars.
3. The work of many Canadians is of world-wide importance	Through dramatization, imaginary radio interviews, or reports illustrate the world-wide influence of such Canadians as (i) Samuel Cunard (ii) Fleming (iii) Alexander Graham Bell (iv) Osler (v) Saunders (vi) Banting.

Unit II Canadian and European Affairs Are Closely Linked

Objectives

1. To appreciate Canada's cultural heritage from Europe.
2. To understand that Canadians and Europeans face common problems.
3. To see how events in Europe are important to Canada.
4. To understand Canada's growing responsibility as a powerful and independent nation.

Topics	Suggestions
1. Canadians have many ties with Europe to-day	Make a chart or map to show routes, distances, and travel time between important centres in Canada and Europe. List conferences and organizations in which Canadian and

(a) as neighbours on the Atlantic Ocean	European representatives share responsibilities. A committee reports on the purpose and work of an important conference or organization.
(b) in sharing responsibility for common problems	Invite a recent tourist or business visitor to Europe to describe his impressions of conditions in certain countries.
(c) in trade, travel, and communication	Collect items from a newspaper, for one week, which will illustrate Canada's interest in European affairs. Arrange topically on the bulletin board.
(d) in common ethnic origins	List publications and European writers read widely in Canada. Make a chart to show the percentage of the different ethnic groups in the total population of Canada. Mark the origin of these groups on a map of Europe. Indicate the main period of their migration. Ask a new Canadian citizen to describe his attitude to his former homeland.
2. New Canadians come from European countries which differ widely from one another	By means of a series of small world maps, compare the extent of European countries and their overseas possessions in successive periods—1950, 1939, 1921, 1914, 1870, 1815, 1755. Committees investigate and prepare reports which account for major changes. Relate migration to Canada with conditions in Europe at various times.
(a) in political boundaries, ethnic groups, government	Committees prepare displays illustrating great events, national heroes, famous buildings, and artistic achievements of some European countries, to show the

	cultural achievements of European civilization. Pupils read to class passages from books dealing with countries in which they are interested. Committees investigate and report on the method of government in European countries, such as Germany, Yugoslavia, France, Spain, Switzerland.
(b) in resources and occupations	Prepare a series of maps showing structure, climatic conditions, vegetation regions, agricultural pursuits in Europe. Contrast forest management in Canada and Sweden. Investigate the extent of farm ponds in France. Would the practice be useful in Canada? Prepare a series of maps showing (i) minerals (ii) centres of manufacture (iii) air, rail, and water routes in Europe. Investigate trade relations between continental European countries and other countries. Note Canada's share. Committees prepare reports and illustrations describing (i) Holland's mastery of the sea and the soil (ii) the heavy industry of the Ruhr valley (iii) vineyards of Mediterranean coast (iv) peasant farm in Normandy. Discuss the future economic and political prospects of Europe.
3. Canadians are deeply influenced by their heritage from Europe	Make a map of Europe to show the main concentrations of various religious groups.
(a) in religion	Members of different faiths investigate the origin of their religious group and report to class.

(b) in science	Examine science text-books and histories of science and list the great scientific discoveries and achievements by Europeans in the last 500 years. To what countries did the scientists belong? Students make brief reports on some of these great scientists. Relate the work of these scientists to developments in Canada, where the influence has been marked.
(c) in the arts	Investigate the extent to which Canadian art has followed European tradition, and extent to which Canadians developed a distinctive art. Ask the special teacher of the subject to give an illustrated talk on "Canada's debt to Europe in music, literature, art, and architecture". Arrange a class visit to the Royal Ontario Museum or request the loan of an appropriate display. Pupils prepare a classroom display of good books in public or school library on great composers, painters, architects, scientists of Europe.
(d) in government	Recall the beliefs and practices which make democracy possible in Canada. Try to trace each belief and practice to its source. Read the story of the French Revolution with a view to discovering its effect upon our political thinking. Investigate the extent of Canadian participation in world affairs before 1914. Show how Canada grew to full nationhood following the First World War.

	Give evidence that Canada has assumed full world-power responsibilities since the Second World War.

Unit III Two Nations on the Arctic Sea

Objectives

1. To gain an understanding of Canada and the U. S. S. R. by comparison of their location and resources.
2. To show how these two northern neighbours have developed different ways of living.
3. To gain an understanding of the functioning of democracy and communism.

Topics	Suggestions
1. Canada and the U. S. S. R. are in similar positions geographically	Using a globe note the relative location of Canada and the U.S.S.R. Compare the size of Russia in area and population with Canada.
(a) northern areas of two large land masses	Note common problems regarding east - west transportation and communication — terrain, distance, winter closing of some seaports.
(b) range of climatic and vegetation areas	Draw a cross section of Canada and the U.S.S.R. along the C.P.R. and the Trans-Siberian railway to show the physical features.
(c) physical features	On an outline map of Asia and North America mark on the tundra, coniferous, hardwood, grassland areas. Prepare climatic maps of Canada and the U.S.S.R. Account for the vegetation through a study of the climate maps.
2. Two peoples have similar occupations	Locate on a map of Russia the rich agricultural lands, through a study of physical, temperature, wind, rainfall maps.

(a) agriculture	Consult the most recent products map available to determine (i) agricultural products grown (ii) mineral products. A committee prepares a report showing that Canadians and Russians have common interests in securing the products of the sea.
(b) great natural resources	Compare the adequacy of the natural resources to support large populations in each country. Collect evidence to show that Russia and Canada are rapidly becoming industrialized nations.
(c) growing industrialization	Indicate the eastward expansion of industrial districts in the U.S.S.R. Have a panel compare Canada and Russia with respect to working conditions (i) on the farm (ii) in the factory. Consult a map showing distribution of population. Locate and account for concentrations of people.
3. The U.S.S.R.—a people of many nationalities and different cultures	Contrast the various peoples which comprise the Soviet Union. Locate on a map the countries which comprise the Soviet Union. Discuss the progress made by many of these minority groups in abolition of illiteracy, preservation of culture, and abolition of racial discrimination. Committees bring in reports on a comparison of Canadian and Russian architecture, clothing, literature, education.

4. Neighbours have conflicting views	Show the significance of the following factors in the rise of communism: (i) abolition of serfdom (ii) revolution of 1917 (iii) nationalization of resources
(a) rise and spread of communism	On a map mark in different colours extensions to Russian territories since 1941.
(b) continuing territorial ambitions of Russia	Discuss ambitions and reasons for Russian expansion.
(c) individual freedom under communism and democracy	Contrast Canada and the U.S.S.R. under the following topics: elections, political parties, schools, churches, farms, labour unions, travel, science, newspapers, fine arts, health, and security.

Unit IV The Near East is of Interest and Importance to Canadians

Objectives

(1) To understand the importance of the Near East and Africa in world affairs.

(2) To appreciate the contributions of the Near East to civilized life.

Topics	Suggestions
1. The modern world benefits from its heritage from the Near East	Mark on an outline map the countries of the Near East.
	Pupils report on the invention of the calendar, of writing, of a simple alphabet and their effect on human progress.
(a) in learning	Collect pictures to illustrate ancient civilizations that existed in the Near East before the Christian era.
(b) in Christianity	Indicate on a map the areas in which the inhabitants are adherents of Mohammedanism, Judaism, Christianity.
(c) in trade	List imports and exports in Canada's trade with the Near East.

2. Many different peoples occupy the Near East	Locate fertile and desert areas of Near Eastern countries and account for their existence. With special attention to the influence of Western ideas and the physical features of the countries involved, committees report on the life of (i) Jewish agriculturalist in Palestine (ii) an Arab nomad (iii) a Turkish trader (iv) an Egyptian fellah. Show films to illustrate life in the Near East. Investigate the causes and degree of fertility of the Nile Valley.
3. The Near East has been the meeting place of nations and a strategic area through the ages	With Jerusalem as a centre, mark on an outline map the countries within a radius of 600 miles. Indicate the distance between important cities. From such Bible stories as those of Abraham, Joseph, and Ezra illustrate the international contacts of the periods in which they lived.
(a) its important location in the world	On a map mark the trade routes through the Near East of Venetian and Genoese traders before the discovery of America. Investigate the effects on trade and travel of the opening of the Suez Canal, and its importance in World War II.
(b) its important resources	On a map mark the oil resources, oil wells, and pipe lines and discuss the interest of foreign countries in their development. Make a graph to show the comparative importance of the Near East as a world supply of oil. Mark the ports of call by sea

	and by air between London and Calcutta. Contrast the Turkey of 1914 with the Turkey of to-day in area, sources of wealth, government, defence, social customs. Pupils representing statesmen from one or more Near Eastern countries describe their attitude towards Russia, Britain, or the U.S.A.
4. Africa is a relatively undeveloped continent	Study a relief map to discover why, with the exception of Egypt, it has been difficult to penetrate Africa from the coast.
(a) reasons for its late development	Mark on a map the main railways of Africa, noting the barriers to be overcome. Use films to illustrate the mode of life. Collect information on medical and scientific achievements which have proved helpful to the people of Africa. Use films to illustrate the standard of living in various parts of the continent. Account for the numbers and distribution of population by referring to climate, physical features, and vegetation maps, diseases, primitive customs.
(b) the interest of other nations in the resources of Africa	Committees investigate the advantages gained by Britain, France, Belgium, the U.S.A., and other countries in different regions of Africa.
(c) Africa's potential importance	Investigate the future possibilities of Africa under the following headings: (i) growth of native states (ii) development of important resources. Mark on a map where such developments are likely to occur.

Unit V The Far East is of Interest and Importance to Canadians

Objectives

(1) To foster respect for the achievements and cultures of countries of the Far East.

(2) To understand the growing importance of Far Eastern countries in world affairs.

Topics	Suggestions
1. Many people in Canada have come from the Far East	Find occasions when North American enterprises have sought cheap labour from the Far East and note the terms under which it came.
(a) from China	Make a list of the occupations in which Chinese Canadians are engaged. On a map indicate the distribution of Chinese Canadians by provinces. Under what circumstances did the first large influx into Canada occur?
(b) from Japan	Compare the life of a Japanese immigrant in Canada with his life in Japan. Investigate Canada's treatment of Japanese Canadians during World War II. On a map of Canada show by means of contrasting colours the distribution of Japanese Canadians in 1935 and in 1950.
(c) from India	Account for the presence in British Columbia of a larger group of East Indians than elsewhere in Canada. A pupil gives a report on the Sikhs. How are Chinese, Japanese, and Indians affected by our laws governing immigration and naturalization?

2. World civilization has been enriched by contributions from Far Eastern countries	On an outline map mark the countries which comprise the Far East. By means of a relief map show how it came about that India and China remained isolated for thousands of years. Investigate the effects of this isolation on the Chinese people. Describe the farming methods of (i) North China (ii) South China (iii) India (iv) Indonesia, by which multitudes of people have been sustained. Students report on the early development of Far Eastern civilizations as indicated by the invention of writing, use of bronze, use of brass, manufacture of silk, cultivation of tea, invention of paper, oriental painting, discovery of the magnetic needle, invention of printing, work in porcelains, respect for learning. Collect several "sayings" of Confucius. On a time chart contrast the span of Chinese civilization with the span of Canadian history.
3. Europeans build empires in the Far East	On a map of the Far East indicate the areas in which the Portuguese, Dutch, English, and French respectively became interested. Discuss motives. Sketch the subsequent history of these holdings. Commodore Perry gives the American government a report on his voyage to Japan, 1853. Mark the ports or areas in China controlled by European powers by 1900.

	Investigate the extent of trade between Far Eastern countries and Canada.
New countries emerge in the Far East	List the members of the Commonwealth and dates on which this status was achieved by each.
(a) from the British Empire—India, Pakistan, Ceylon, Burma	Students report on the work of Ghandi, Nehru, and Jinnah in the winning of Commonwealth status. What are the duties of a High Commissioner at Ottawa? What arguments would a Moslem give for the separation of Pakistan and India? A Burmese explains why his country withdrew from the Empire.
(b) from island empires —the Philippines, Indonesia	Report on the progress of the Philippines since the Spanish-American war. Investigate recent developments in the relationship between Holland and Indonesia.
(c) From ancient nations —China, Japan	Show developments in modern China by references to (i) the work of Sun Yat Sen (ii) the war with Japan (iii) the civil war. Discuss General McArthur's administration of Japan.
5. The countries of the Far East have many problems in common—poverty, illiteracy, security, government	Compare standards of living in India and China. Contrast with those prevailing in Canada. "An illiterate man is not necessarily an uneducated man". Discuss this statement in relation to the Indian villager or the Chinese peasant. Collect data on the progress being made to overcome illiteracy in India and China.

Discuss: (i) the respective appeal to Far Eastern countries of democracy and communism (ii) the advantages to Indian security afforded by her association with other democracies (iii) national movements in the Far East.
Investigate the proposals of The Colombo Plan to alleviate conditions.

Unit VI Climate and Surface Features of the World Influence Man's Use of the Land

Objectives

1. To observe the great unevenness in the distribution of mankind over the earth.
2. To understand the relationship between natural regions of the earth and the distribution of population.
3. To understand how climate is produced.
4. To see how man everywhere is establishing workable connections with his environment.

Topics	Suggestions
1. Man lives in regions where he can establish "workable connections" with his natural surroundings	By a study of the topographical map of your area and of local history, try to account for the location and density of settlement. Consider such factors as physical features, climate, vegetation, traditions, and ambitions of the people.
(a) the influence of physical features	Using a population map of the world, guide the class to set themselves this problem—How to explain the distribution of population over the world? Collect air views of typical physical features of the world such as high mountains, highlands, plains, great river valleys. Discuss the advantages and disadvantages of each for settle-

	ment. Locate on a map of the world typical settlements in each region, and attach to the map pictures of the settlements. On a map of the world draw in the great river valleys and drainage systems which support large populations and the highlands that delimit their basins.
(b) the influence of climate	Make a study of climatic and vegetation maps of the world. Question to bring out the connection between the two.
(c) the influence of vegetation	Make a display of drawings, charts, or pictures to show the influence of climate upon vegetation, and of both upon animal and human life.
(d) the influence of man's own ideas	List examples of man being moved to choose where and how he lives more by the influence of his beliefs or traditions than by environment. Locate regions of the world which no longer support a large population because man mismanaged natural resources. List areas which support adequately a dense population through man's efforts to create suitable conditions. Organize a panel discussion on the most important factor accounting for the distribution of population.
2. Climate is made by the sun, and by the motions and surface features of the earth	Distinguish between climate and weather. Make a series of graphs or charts to show the temperature and rainfall throughout the year in your community. Contrast with those in a community in a different region.

		Contrast the climate of an inland and seaside town on the same latitude. Account for the difference. Pupils study a map of ocean currents and explain why Murmansk is an ice-free port. Explain the influence of the sun and the motion of the earth upon climate by the following steps, using globe and flashlight, or charts: (i) an unmoving earth, with land and water areas distributed evenly over its surface, sits still before the sun (ii) the earth rotates on its axis (iii) the earth revolves about the sun with a vertical axis (iv) the earth revolves with tilted axis.
3.	Climate and physical features influence vegetation	Study climate, physical features, and vegetation maps of the world. Discuss the influence of climate and physical features upon vegetation in selected areas. List, describe, and locate the main types of vegetation regions throughout the world. Collect pictures to illustrate vegetation in typical regions. Draw a map of that part of Europe and Africa lying west of 20° E. Long. To the right of the line draw pictures illustrating the vegetation belts from Cape North to Cape of Good Hope.
4.	Man lives by tilling the land in many favourable regions	Committee of pupils does research work, and charts the climatic conditions under which man produces important pro-

	ducts such as rubber, rice, sugar cane, citrus fruits, cotton, coffee, tea, hemp, corn, spring and winter wheat, oats, barley, potatoes. Draw north and south lines through the continents; draw a map of that part of the continent on one side of the line, and on the other illustrate the products of the land. Contrast methods of farming the same crop in different countries. Describe and account for primitive farming methods in Amazonia. Make a large scale soil and product map of your area. Committee visits the local agricultural representative to discuss land use in your area and reports to class.
5. Man develops other distinctive ways of using nature's resources	Working in groups, pupils prepare reports on the following ways of making a living—fishing, hunting, nomadic herding, ranching, marketing natural products from plants and trees —emphasizing regions, methods, food supply, living conditions and customs, density of population.

Unit VII Man Utilizes the Resources of the Earth

Objectives

1. To learn how man is extending his control over natural resources.
2. To realize the advantages that arise as mankind moves toward a world community.

Topics	Suggestions
1. A small community dependent on local resources has many limitations	Discuss the effect on your community of a return to the transportation and communication

	facilities of pioneer days. Indicate occupations that would be revived. Describe the limitations experienced by such people as Eskimos or Peruvian villagers who are forced to live in small self-contained communities.
2. Man's wealth comes from the natural resources of the earth	By means of charts or graphs compare the relative abundance or scarcity of products of the land in Canada and Mexico. Show the close relationship of such abundance or scarcity to the standard of living. Follow a siniilar procedure with regard to the more important mineral resources of Italy and France. Make a minerals map of the world showing the distribution of basic minerals, useful minerals, gems, and precious metals. Discuss (i) shortages as a cause of war (ii) war as a waster of resources (iii) eventual exhaustion of important resources. Make a map of the water-power resources of the world. By a graph show how much has been utilized.
3. Man's wealth is increased by the processing and manufacturing of raw materials	Selecting a few examples of processed commodities, account for the location of the processing plants and show where the products are marketed. On a map mark the most important centres of manufacture in (i) North Western Europe including the British Isles (ii) North Eastern United States including the St. Lawrence Lowlands (iii) Soviet Russia.

	Discuss several of the factors that explain the heavy concentration of manufacturing in these three areas of the world. List countries that stress the lighter industries. Pupils find an explanation. Do similar research with such regions as the western plains of the United States, the west coast of the United States, Japan, India, Australia.
4. Man's wealth is increased by trade	On a map mark the main trade routes of the world and indicate the volume of world trade. Discuss international conditions that have sharply reduced the volume of trade in various parts of the world since World War II. Describe the effect on the countries most affected.
5. Man's wealth is increased and distributed by transportation and communication systems	Pupils prepare written reports illustrated by pictures, maps, and charts, describing the transportation of (i) ore from the Mesabi range (ii) grain from the Canadian prairies (iii) oil from Colombia (iv) rubber from Malaya. Prepare a display of maps, pictures, and explanatory comments to show the contrast in the life of a region before and after the development of modern transportation and communication. Show how the Mississippi transportation system serves producers and consumers in the United States. Carry out similar investigations for other parts of the world, such as the Rhine, Volga, and Yangste valleys.

	Place on a time chart the canal era, the railway era, the highway era, and the air era.
6. Countries and peoples of the world are interdependent	Investigate the relative importance to your community of transport by water, rail, highway, air. Debate whether progress in transportation and communication has contributed to the common understanding and unity of the world.

Unit VIII Cooperation is Essential for World Security and Progress

Objectives

1. To show that Canadians have made great achievements through cooperation.
2. To understand the conditions that make world cooperation difficult but necessary.
3. To understand Canada's contribution to developing world security through the United Nations.

Topics	Suggestions
1. Experience teaches Canadians to cooperate	Hold a class discussion on the relative importance of the spirit of cooperation and the spirit of independence in a pioneer society.
(a) as pioneers	Discuss and list in parallel columns the benefits to Great Britain and to Canada of their association during Canada's history as a colony.
(b) as colonials	Select the outstanding advances made through cooperative effort in the growth of Canadian independence from the time of Durham to the Statute of Westminster.
(c) while growing into nationhood	Discuss the reasons why Canada is the only American country

		that did not fight a war of independence.
2.	Canadians with other peoples of the world face the problems of national security after World War II	A committee reports on possible uses of atomic energy. A committee collects pictures of the Chalk River plant and reports on the general nature of the atomic research which is being carried on there.
	(a) the atomic age	What is the probable effect of atomic development upon (i) the struggle amongst nations for oil, coal, minerals, food (ii) world cooperation?
	(b) an impoverished Western Europe	Collect information on the disruption of European life during World War II caused by (i) damage to homes and factories (ii) displacement of populations (iii) upsetting the balance of power. Show graphically the difference between the international trade of Western Europe in 1938 and in 1946. Debate: Western civilization cannot survive without a prosperous Western Europe.
	(c) the problem of peace treaties	Committees collect information on the purpose, scope, and achievements of the Marshall Plan. Three committees present the problems of framing peace treaties with Germany, Italy, Japan.
3.	Canadians with other peoples of the world face long-term world problems	Making use of earlier studies, mark on a map those areas of the world where poverty is a constant menace to the welfare of the people. Add numbers of people affected. Obtain statis-

(a) extreme poverty and ignorance in many parts of the world	tics of literacy and standards of living in these areas. Selecting one of these areas, investigate the causes and possible remedies of these conditions. Contrast the life of an Ontario farmer with that of a peasant in East Asia regarding (i) variety and adequacy of diet (ii) quantity and suitability of clothing (iii) home (iv) labour-saving devices.
(b) the demand for independence	List the countries that have gained and those that have lost independence since World War II.
(c) the clash of ideologies	Report on movements for independence in one or two countries noting the relationship to (i) ownership of land (ii) communism (iii) foreign influence.
(d) differences of race and religion	Make a world map to show the chief races and religions of the world. Committees investigate and report on the effect of social and religious differences upon (i) Israel and Arabia (ii) India and Pakistan (iii) Canada and the U.S.A.
4. Canadians work with other peoples of the world in the United Nations.	Make or obtain a chart of the organization and powers of the General Assembly, Security Council, Secretariat, and such specialized agencies as Unesco, WHO, FAO. Print for classroom display a few of the most significant statements found in the U. N. Charter or in the Declaration of Human Rights. Collect pictures of U. N. gatherings and of the permanent headquarters in New York.

	Make a U. N. flag for your classroom.
(a) achievements	Present arguments for and against the continuance of the veto in the United Nations. Class keeps a loose-leaf scrap book, devoting a section to each of the main divisions of the U.N., entering their outstanding achievements to date and adding subsequent advances as they are made.
(b) disagreements and opposing groups	Name and colour on a map the communist countries of the world. Draw a line from Moscow to the capitals of those countries that are referred to as Russian statellites. Mark in the boundary line which would correspond to the Iron Curtain. Collect clippings which illustrate the opposing views on problems presented to the General Assembly. Committee assembles information on the Atlantic Pact—purpose, progress to date, problems, Canada's part.
(c) Canada's place and responsibility in the United Nations	Account for Canada's strong support of the United Nations since its inception. Prepare biographical sketches of outstanding Canadians such as Dr. Brock Chisholm and H. L. Keenleyside, who hold high posts in U. N. organizations. Assemble in a special section of the class loose-leaf scrap book evidence of Canada's faith in and support of United Nations. Discuss the personal responsibility of each Canadian to United Nations.

Grade X Reference Books

For Pupils

Atwood and Thomas: *Nations Overseas.* Ginn.
Bradley: *World Geography.* Ginn.
Herdman: *Geography for Today, Book V.* Longmans.
Jones and Murphy: *Geography and World Affairs.* Gage.
McConnell and Watson: *Geography of Lands Overseas.* Gage.
Packard et al: *Geography of the World.* Macmillan.
Rogers et al: *The Story of Nations.* Clarke, Irwin.
Thralls: *The World, its Lands and Peoples.* Gage.
Wallbank: *Man's Story.* Gage.

For Teachers

Cressey: *Asia's Lands and Peoples.* McGraw-Hill.
Robinson and Shotwell: *History of Western Europe.* Ginn.

MATHEMATICS

General Introduction

The Role of Mathematics

The ability to compute accurately and to think clearly in terms of quantities, either specific or generalized, is becoming of increasing value in all phases of social and economic life. It was never more important that the teacher should appreciate the role of mathematics in modern civilization.

Relation to Pupil's Experience

If the pupil realizes the part which mathematics plays in his daily life, the subject becomes meaningful to him. Mathematics is challenging and interesting to the pupil who sees its importance in his home and in his community. The material presented, therefore, should be related as closely as possible to situations that are within the experience and comprehension of the pupil.

The Study of a System

While the ideal method is to develop concepts in mathematics from the personal experience of the pupil, it should be remembered that mathematics is the product of racial experience, the collective result of a large number of thinkers. Pupils in the Intermediate Division should begin to gain an appreciation of mathematics as a logical system by developing some of the underlying principles. The understanding of these principles and the mastery of the related skills require intellectual effort on the part of the pupil. It is the task of the teacher to create conditions which will make the pupil willing and eager to undergo this intellectual discipline because he feels it to be eminently worthwhile.

A Sense of Accomplishment

The value of confidence which comes from successful accomplishment as a result of the pupil's best effort should always

be kept in mind. The pupil should be encouraged to aim at a high degree of accuracy in the fundamental operations. Success in mathematics is based on ability to think independently and logically, to express ideas clearly and concisely, and to set them down accurately and neatly. In the selecting and designing of exercises, however, the degree of difficulty should be adjusted to the mental maturity of the pupil so that he has a reasonable opportunity of being successful.

Remedial Teaching

At the beginning of the school term the teacher should not assume that his pupils are fully, or equally, competent in the work of the preceding grade. Standardized achievement tests are useful in indicating the pupil's level of accomplishment in comparison with what may be expected of the average pupil under normal conditions. The results of such tests, viewed in the light of the mental age of the pupil, will often indicate the kind of remedial teaching that is necessary. The teacher should not postpone this remedial work until the next term or until the next grade, but should begin it as soon as the need is revealed. Failure to do this will result in an accumulation of faulty habits, repetition of errors, improper techniques, and undesirable attitudes.

Problem Solving

The aim in solving problems should be to learn to use a general method of attack rather than to depend upon the memorization of type solutions. Success in problem solving results from individual initiative and logical procedure, both of which may be developed by training the pupil to adopt some such plan as the following.

1. Read the question carefully, making sure that you understand every part of it.
2. Decide what you are asked to find.
3. Re-read the question to see what facts you are told. If you can make a diagram to illustrate the question, mark these facts on it.
4. Decide how you can use the given facts to help you find what is asked for.

5. Examine your answer to see whether it is reasonable, and then verify it by using it in the original statement.

The importance of training students to use clear, succinct, but complete solutions of problems cannot be overemphasized. Business requires the submission of calculations to support the answers obtained. These calculations should be shown on the same sheet as the solution and not in discarded pieces of paper or on the back pages of a notebook.

The following is an example of an acceptable solution with its accompanying calculations:

27¾ yd. @ 1.32 = 36.63	1.32	.98	.7093
35 " @ .98 = 34.30	27¾	35	8
70.93	99	490	5.6744
Sales tax 8% 5.67	924	294	
$76.60	264	34.30	
	36.63		

In the foregoing solution it may be noted that to find 8% of $70.93, 1% of the amount was used and then multiplied by 8. This is standard practice in commercial work.

Frequently pupils are unable to solve written mathematical problems owing to lack of reading ability rather than to any lack of mathematical knowledge. A recognition of this weakness should suggest the necessity for special instruction in reading mathematical problems.

Difficulty in solving problems may be due to an emotional disturbance of some kind. Such emotional blocking may arise from the sense of frustration experienced by the pupil when he is required to attempt problems above the level of his maturity or to apply principles which have not been thoroughly taught by numerous simple examples.

On the other hand, the pupil's initiative and latent creative ability will be stimulated if he is challenged from time to time by being given the responsibility for studying a topic or working on a problem without the teacher's assistance. If the assignments are suited to the varying abilities of the members of the class, each one may be enabled to feel on occasion the keen satisfaction which comes from an awakened sense of achievement.

Conservation

It is important that pupils develop an intelligent appreciation of the need for conserving our natural resources of forest, farm, and water supply. The teacher's attention is called to the *Report of the Select Committee on Conservation, 1950,* Chapters 35 and 36, "Conservation and Education" and "Conservation in the Schools", as well as to the *Report of the Ontario Royal Commission on Forestry, 1947,* Chapter 14, in which the relation of conservation to education is discussed. Problems in mathematics may be related to the various phases of conservation—forests, soil, and water supply. Teachers of mathematics should cooperate with teachers of other subjects in coordinating the work on conservation. An appropriate topic might be the calculation of the cost of shrubs, flowers, seeds, and paint for the improvement of the school grounds. Suitable problems should also be used to impress upon the pupils the economic losses suffered through soil erosion, floods, and forest fires.

Objectives

The preceding remarks illustrate some of the following objectives of the work in the Intermediate Division.

1. A thorough understanding of the fundamental operations and increasing power to apply them with accuracy and facility.
2. A continuous development of the capacity for mental calculation.
3. Ability to apply mathematical knowledge to the solution of problems which are meaningful to the pupil and of social value.
4. Self-reliance which comes from willingness to attack and ability to solve problems.
5. Acquisition of the habit of judging the reasonableness of an answer and of checking its accuracy.
6. The drawing of valid conclusions from experiments in simple space relationships.
7. An understanding of the generalization of number and of the application of algebra to simple problems.
8. An appreciation of the wide application of mathematics and of its influence in the advancement of civilization.

9. A sense of personal responsibility for accuracy, neatness, and precision, with the consequent feeling of satisfaction resulting from work well done.
10. The discovery and development of individual mathematical abilities, aptitudes, and interests so that pupils will desire to continue the study of the subject.

Grade Seven

I. Skill in Fundamental Operations

Preliminary survey of the class-group to determine the achievement levels of the individual pupil.

Diagnostic testing and remedial treatment as needed.

Frequent, regular, and well-motivated drill involving the fundamental operations in the work of Grades I to VI.

Drill practices on new work of Grade VII, following presentation of each topic, together with periodic cumulative review throughout the year.

Suggestions

1. Teachers are reminded of the value of frequent, varied, and carefully planned oral practice in all phases of the work. The resourceful teacher will be ready to improvise practice material and problems suited to the needs of the pupils, supplementing the exercises provided in the text.
2. Teachers should endeavour to impress the pupils with the necessity of striving for a high degree of accuracy in the fundamental operations. To this end the complexity of the exercises should be carefully adjusted to the pupils' abilities.
3. If properly motivated, drill practice can be made an enjoyable part of the mathematics period. Care must be taken that incorrect methods are not perpetuated by unsupervised practice and that mere repetition is not depended upon to produce the desired improvement.

II. Common Fractions

Meaning and use
Review of addition and subtraction
Multiplication
    fraction by a whole number
    whole number by a fraction

fraction by a fraction
mixed number by a fraction
mixed number by a mixed number

Simplification of fractions through division of numerator and denominator by a common factor

Practical problems involving fractions

Suggestions

1. It is essential that the work in fractional numbers be introduced through numerous simple concrete examples. An aid in making clear the meaning of a fraction at this stage might be to write 2/5 as 2 fifths.
2. It is important also that operations with fractions should be based on techniques which are clearly understood and which are as closely as possible related to the fundamental properties of a fraction. In short, the understanding of numerous specific concrete illustrations should always precede the learning of a mechanical technique.
3. The review work in fractions should stress the fact that the value of a fraction is unchanged by multiplying or dividing numerator and denominator by the same number. This principle should then be used as generally as possible as the basis for teaching the procedure to be followed in the fundamental operations with fractional numbers.
4. The student should not be permitted
   (i) to bring mixed numbers to improper fractions for addition or subtraction, or for multiplication by a whole number,
   (ii) to reduce fractions to lower terms if calculations are thereby made more difficult,

   e.g., $\frac{84}{100}$ of $42 = \frac{21}{25}$ of 42.

III. Decimal Fractions

Meaning and use

Review of addition and subtraction

Multiplication
decimal by a whole number
decimal by 10, 100, 1000, etc.
whole number by a decimal

decimal by a decimal
treatment of zeros in decimal answers
placing decimal point by inspection when multiplying by 10, 100, 1000—.1, .01, .001
practical problems involving decimals
the common metric units of length (metre, cm., mm.)

Suggestions

1. The mechanical rule for the placing of the decimal point in the product of numbers involving decimal fractions should be postponed until repeated simple examples based on a step-by-step development prepare the pupil for this technique:

   e.g., $3.1 \times 4 = 3\frac{1}{10} \times 4 = 12\frac{4}{10} = 12.4$

   $2.4 \times 3.6 = \frac{24}{10} \times \frac{36}{10} = \frac{864}{100} = 8.64$

2. Examples should probably be confined to numbers containing not more than 3 places of decimals.
3. The teacher should keep in mind that in certain cases an operation may be more readily performed with the corresponding common fraction than with the decimal:

   e.g., $24 \times .25 = 24 \times \frac{1}{4} = 6$

   Hence the pupil should be given practice in converting decimal fractions into their common fraction equivalents:

   e.g., $.25 = \frac{25}{100} = \frac{1}{4}$

   $.375 = \frac{375}{1000} = \frac{3}{8}$

IV. Percentage

Meaning and use
Equivalent forms: 5 per centum, 5 percent

$5\%, \frac{5}{100}, .05$

Meaning of 100%: the whole quantity, $\frac{100}{100}$, 1

Expressing simple percents as decimal fractions
Expressing decimal fractions as percents
Expressing a percent as an equivalent common fraction
Expressing halves, fourths, fifths, and tenths as percents
Finding a percent of a number

(i) by expressing the percent as a decimal fraction and multiplying

(ii) by using the common fraction equivalent of the percentage and multiplying

Expressing one number as a percentage of another
Simple practical problems involving percentage

Suggestions

1. Pupils should be given practice in using both decimal and common fraction equivalents in the problems involving percentage so as to develop judgment in choosing the more suitable form.

   Thus $\frac{1}{6}$ is to be preferred to .166 or .167, but .04 is usually to be preferred to $\frac{1}{25}$.

2. The work on common fractions, decimal fractions, and percentage should result in the pupils being thoroughly familiar with such equivalent forms as the following:

   $\frac{1}{2} = .5 = 50\%$

   $\frac{1}{4} = .25 = 25\%$, and its multiples

   $\frac{1}{8} = .125 = 12\frac{1}{2}\%$, and its multiples

   $\frac{1}{5} = .2 = 20\%$, and its multiples

   $\frac{1}{10} = .1 = 10\%$, and its multiples

3. Memorization should result from and not precede repeated use.

V. Practical Problems Arising in the Ordinary Life of Pupils in School, Home, and Community

Games, cooking, woodworking, sewing
Keeping cash accounts of newspaper sales, care of chickens

or live stock, together with the use of bills and receipt forms
Budget for boys and girls
allowance, holiday money, club funds
Managing Junior Red Cross and other similar funds
Travel by car, bus, train
Conserving the resources of the home, the farm, the local community, and the country at large
Improving the school grounds
Earning money by selling on commission
Taking advantage of discounts
in paying bills—gas, water, electric
in paying cash for purchases
in bargain sales

Suggestions

It is extremely important that the pupil should be prevented from acquiring an attitude of frustration toward problem solving. In order to avoid this, the teacher should constantly keep in mind the following considerations:

1. While it is true that a problem may naturally be used to introduce the discussion of a topic, yet care should be taken that the fundamental principles involved are thoroughly understood, through the use of a series of simple numerical illustrations, before any extensive problem assignment is given.

2. Thorough oral discussion of illustrative problems together with the development of oral solutions should precede written work.

3. The teacher should never be in a hurry to introduce a formula or a mechanical technique. With junior pupils particularly, the procedure should be to emphasize the fundamental principle involved by applying it to numerous concrete examples and to delay the introduction of any generalizing formula or mechanical method until the pupil has become thoroughly familiar with the underlying idea. This is desirable for two reasons:
   (i) in order that the pupil may not solve the problem in a purely mechanical fashion, and
   (ii) in order that, should the pupil forget the formula, he may still be able to solve the problem from basic principles.

   The formula $i = prt$ is a case in point.

4. A major factor in the pupil's ability to solve problems is his skill in reading. Too often the teacher assumes that the pupil comprehends the problem when actually he may fail to grasp its significance. Not only, therefore, should the pupil be taught to read and re-read each question with concentration, but also the teacher should frequently determine by suitable oral discussion whether the pupil really understands the language of the question and the nature of the problem posed.

5. Pupils should be systematically trained in a desirable mental approach to the problem situation. They should be constantly reminded to ask themselves, "What am I to find?", and other similar questions which will guide their procedure.

6. It is important that the pupil should learn to estimate his answer in advance of the solution, to check his final answer for reasonableness, and then to verify it for accuracy.

7. A pupil's training in neatness and orderliness of work will reveal itself in the manner in which he sets down his written solutions. Here he should have the benefit of careful training and constant supervision from the beginning. Statements should be as clear and concise as possible, and any necessary mechanical work should be shown adjacent to the written solution.

VI. Measurement

Review of linear and square measures
Finding the area of a rectangle, measuring its diagonal
Meaning of volume
    the cubic inch, the cubic foot, the cubic yard
Finding volumes of rectangular solids and contents of rectangular containers
Straight lines
    vertical, horizontal, oblique, perpendicular
Measuring accurately with ruler graduated to sixteenths of an inch and to millimetres
Drawing lines to scale
Interpreting pictographs, bar graphs, and line graphs
Making simple bar graphs, line graphs, and scale drawings

1. Each classroom should possess at least the following items of equipment:
   - a bulletin board on which pupils' recent work in mathematics, or current topics of mathematical significance may be displayed
   - a section of cross-ruled blackboard or, perhaps better, a cross-ruled chart attached to a spring roller
   - yard stick, metre rule, and several straight-edges
   - a set of models of the common solids, particularly a subdivided cubic foot
   - pint, quart, gallon, peck, and bushel measures
2. Each pupil should have a ruler, graduated in sixteenths of an inch and in millimetres. A supply of squared paper, ruled ten lines to the inch, should be available.
3. In connection with exercises in accurate measurement, pupils should be given practice in estimating the measures of objects and familiar distances, and in using the unit of measurement suited to the occasion. They should also be introduced in an elementary way to the idea of approximation in the expression of measured quantities.
4. The introduction and use of formulas in measurement should be avoided until the pupil is thoroughly familiar with the fundamental concepts on which the formulas are based. The development should always be graphical and objective and the applications simple and meaningful.
5. Line graphs should be developed directly from bar graphs. A line graph should be considered as the upper boundary of a series of vertical bars.
6. At this stage the right angle might be thought of simply as a square corner, an idea already familiar to the pupil.

Grade Eight

I. Skill in Fundamental Operations

Preliminary survey of the class-group to determine the achievement levels of the individual pupil

Diagnostic testing and remedial treatment as needed

Frequent, regular, and well-motivated drill involving the fundamental operations in the work of Grades I to VII

Drill practices on the new work of Grade VIII, following presentation of each topic, together with periodic cumulative review throughout the year

Suggestions

1. Teachers are reminded of the value of frequent, varied, and carefully planned oral practice in all phases of the work. The resourceful teacher will be ready to improvise practice material and problems suited to the needs of the pupils, supplementing the exercises provided in their texts.

2. Teachers should endeavour to impress the pupils with the necessity of striving for a high degree of accuracy in the fundamental operations. To this end the complexity of the exercises should be carefully adjusted to the pupils' abilities.

3. If properly motivated, drill practice can be made an enjoyable part of the mathematics period. Care must be taken that incorrect methods are not perpetuated by unsupervised practice and that mere repetition is not depended upon to produce the desired improvement.

4. Practice in short division should be a feature of the review of the fundamental operations. By the end of Grade VIII, the transition from long to short division for single digit divisors should be completed.

II. Common Fractions

Review of addition, subtraction, multiplication

Division
- whole number by a fraction with numerator 1
- whole number by any fraction
- fraction by a whole number
- fraction by a fraction
- similar operations with mixed numbers

Review of the simplification of fractions through division of numerator and denominator by a common factor

Multiplication by a proper fraction—decreased result

Multiplication by an improper fraction—increased result

Division by a proper fraction—increased result
Division by an improper fraction—decreased result
Practical problems involving fractions

Suggestions

1. It is essential that the work in fractional numbers be introduced through numerous simple concrete examples and should be based on the following fundamental principles:

   (i) The fraction $\frac{2}{5}$ means 2 fifths;

   (ii) The *value* of a fraction remains the same when the numerator and denominator are multiplied or divided by the same factor;

   (iii) In dealing with the addition and subtraction of fractions, the pupil should be encouraged to proceed, as he gains experience, from Statement I, below, to Statement II.

   Statement I

   $$\frac{3}{4} + \frac{2}{5} - \frac{5}{6} = \frac{45}{60} + \frac{24}{60} - \frac{50}{60} = \frac{69}{60} - \frac{50}{60} = \frac{19}{60}$$

   Statement II

   $$\frac{3}{4} + \frac{2}{5} - \frac{5}{6} = \frac{45 + 24 - 50}{60} = \frac{19}{60}$$

2. While it is possible that some of the pupils must depend almost entirely on memorization in the application of the rule for division of fractions, it is suggested that most of them may be helped to see a reason for this rule, and also for those dealing with the other operations, in the following approach which emphasizes the basic properties of fractions.

   $\frac{1}{2} + \frac{1}{4} = \frac{2}{4} + \frac{1}{4}$ = 2 fourths + 1 fourth =

   3 fourths = $\frac{3}{4}$

   $\frac{1}{2} \times \frac{1}{4} = \frac{1}{4}$ of $\frac{1}{2} = \frac{1}{4}$ of $\frac{4}{8} = \frac{1}{4}$ of 4 eighths =

   1 eighth = $\frac{1}{8}$

$$\frac{1}{2} \div \frac{1}{4} = \frac{2}{4} \div \frac{1}{4} = 2 \text{ fourths} \div 1 \text{ fourth} = 2$$

3. Pupils should be trained to observe accuracy in statements of equality, using the following form

$$\frac{2}{3} \text{ of } \frac{3}{5} + \frac{1}{4} = \left(\frac{2}{3} \text{ of } \frac{3}{5}\right) + \frac{1}{4} = \frac{2}{5} + \frac{1}{4} = \text{etc.}$$

and avoiding such errors as

$$\frac{2}{3} \text{ of } \frac{3}{5} + \frac{1}{4} = \frac{2}{3} \text{ of } \frac{3}{5} = \frac{2}{5} + \frac{1}{4} = \text{etc.}$$

III. Decimal Fractions

Review

meaning of decimals as common fractions with denominators which are powers of 10
place value
story of invention of decimal fractions
addition, subtraction, multiplication

Division

change of common fractions to decimals (division of numerator by denominator)
division by 1,000, 100, 10, .1, .01, etc.
effect of multiplication and division by a number less than one
practical problems involving decimals

Suggestions

1. The teaching of decimals should be based on the fundamental properties of fractions. For example, the rule for making the divisor a whole number in the division of decimals should be derived from the knowledge of the fact that multiplying numerator and denominator by the same number (in this case a multiple of 10) does not alter the value of the fraction.

IV. Percentage

Review and extension of the work of Grade VII, including

(a) finding a "percent" of a number

(i) by expressing the percent as a decimal fraction and multiplying

(ii) for simple percentages such as 50%, 25%, etc., by using the common fractional equivalent of the percentage and multiplying

(iii) by using the 1% method. The 1% method has more frequent application and should be thoroughly learned. For example, if it is required to find 8% of 74.60, it is quite simple to note that 1% of 74.60 is 0.7460 and consequently, 8% of 74.60 is $0.7460 \times 8 = 5.9680$

(b) expressing one number as a percentage of another

Special treatment of more difficult percents

100% and "percents" greater than 100%

1%....9%—correct translation to decimal fractions

fractional "percents" in common use—½%, ¼%, etc.

"percents" such as 2½%, 3¼%.

Finding a number when a "percent" of it is known

Practical problems involving percentage

Suggestions

1. The principles of problem solving outlined in the Grade VII Course are equally applicable to the work of Grade VIII and should be carefully studied by the teacher.

V. Practical Problems Arising in the Home, School, and Community Life of the Pupils

Managing Junior Red Cross and similar funds

Estimating cost of building school rink, improving school grounds

Budgeting for Hallowe'en party, Christmas concert

Building stage for puppet show

Laying out a garden, finding cost of seed

Conducting a paper collection and disposing of papers

Keeping records of athletic events

Laying out a softball diamond

Managing a business venture

ticket sale, selling newspapers, care of chickens or livestock

Making a map of the local community to scale

Finding cost of clothes

Planting a reforestation area

Arranging transportation for an excursion

Suggestions

1. Only simple and direct problems within the range of the pupils' experience should be presented at this stage. These problems should illustrate the various ways in which simple calculations involving the fundamental operations, fractions, decimals, and percentage are used in everyday activities.

VI. Measurement

Problems based on topics of Grade VII

The circle

radius, diameter, circumference

discovery by experiment of relationships

circumference is $3\frac{1}{7}$ or 3.14 times diameter

area is $3\frac{1}{7}$ or 3.14 times square of radius.

The angle

defined by rotation of line

measured by amount of rotation

degree as a unit of measurement

drawing and measurement of angles with ruler and protractor

right, acute, and obtuse angles

Interpreting and making simple circle graphs

The magnetic compass

Use of ruler, compasses, and protractor

in design, in drawing plans, in reading of topographic maps, in solving problems, etc.

further practice in linear measurements involving the millimetre, centimetre, and metre

knowledge of the kilometre

Triangles

definition and construction of equilateral, isosceles, scalene, right-angled triangles

discovery of relationships holding among angles in these triangles

experimental derivation of area

Suggestions

1. A reasonable degree of accuracy and neatness should be required. Measurements within one-sixteenth of an inch, one millimetre, and one degree should be expected.

2. Attention should be given to the development of the idea of approximation which was introduced in Grade VII. Continual practice in estimating the measures of objects, distances, and angles will help to familiarize the pupil with the units involved. Comparison of the answers which are obtained by the individual pupils of the class is one useful method of developing the idea of the degree of accuracy possible under any given conditions.

3. Throughout the work in measurement, emphasis should be on the experimental approach. This applies, for example, in the discovery of the approximate relationship between the circumference of a circle and its diameter and in the checking of the formula connecting the area with the radius; it should govern the introduction to the work on the metric system where it is important that the pupil actually use the metric units in measurement and not simply learn a table of measures; it should also be the basis for teaching the relationship connecting the angles of any triangle in the section on experimental geometry.

4. Each pupil should have a pair of compasses and a protractor.

Grade Nine

General Observations

1. Since the course in Mathematics is obligatory for all Grade IX pupils, it must meet the requirements of those who may shortly leave school to enter industry or business, those who have begun or who may at the end of the year transfer to a vocational course, and those who, proceeding through the various grades of the general course, finally attempt the study of the Algebra, Geometry, and Trigonometry of Grade XIII.

   For this reason, the following outline includes sections on Experimental Geometry, Measurement, Commercial

Arithmetic, and Algebra, each of which contains those topics which have been thought essential to these various groups in Grade IX. Where the class group is reasonably homogeneous and its future programme is known, the course may be modified to suit its needs by varying the time allotted to each section and with it the emphasis and depth of treatment of the different topics. In any case, the teacher should endeavour to provide an enrichment of the course for the abler students through the suggested supplementary topics and more difficult examples.

2. Although it has been thought desirable to outline the course under the foregoing sections, it is important that the teacher take advantage of every opportunity to correlate as fully as possible the various phases of any one topic. In this way the pupil will gradually come to realize that mathematics constitutes one main area of human knowledge and that the branches of Arithmetic, Algebra, and Geometry are merely different aspects of the same subject.

3. While it is hoped that each teacher will give serious thought to the most advantageous manner of organizing the year's work, it may not be out of place to suggest, in general terms, one possible arrangement.

   Rather than beginning with an extensive review of the fundamental operations involving integers and common and decimal fractions and then proceeding to the other arithmetical topics in regular order, it is suggested that the year's work might begin with three periods a week in Experimental Geometry and two periods in Measurement, followed in due course by three periods a week in Algebra and two in Commercial Arithmetic. Finally would come any necessary adjustments for finishing any particular section and for conducting a comprehensive review at the end of the year.

   Under this programme the practice in the fundamental skills would be spread throughout the year and would be obtained not only by frequent systematic oral and written drill but also by the use of numerous arithmetical examples in the introduction to algebraic topics and in the application of geometric concepts.

The necessary practice in the fundamental operations should be made a regular feature of the mathematics lesson. Ordinarily it would occupy the first few minutes of the period. It should not, however, be haphazard or impromptu, but should consciously be aimed at correcting the weaknesses discovered through periodic diagnostic tests on definite aspects of the work. All pupils should participate in oral drill, but not all need take part in in all the written tests. It should be remembered that accuracy and speed in the fundamental operations can be maintained only by regular practice and testing. This should be followed by diagnosis of errors and specific treatment. Those who have no need of remedial practice may be assigned other work.

4. The importance of the oral approach to mathematical teaching should constantly be kept in mind. New topics or new principles are frequently best introduced through a combination of the oral and written presentation. Their development should then proceed through numerous oral examples, followed by assigned written work at the blackboard or desks. Such a procedure will not only save valuable time but also enable the teacher better to determine the success of his presentation of the topic.

   This should not be taken to imply that all new topics should be introduced by the teacher in a formal developmental fashion. On the contrary, the teacher should assign to the pupils a new topic or a new project for study or experiment at home or in the classroom at increasingly frequent intervals as they proceed through the grades. Only in this way will they develop initiative and ability in obtaining new ideas from the printed word, a development which must occur if they are to have any considerable success in furthering their education once they leave school.

5. The teacher of mathematics should assume his share of the responsibility for the quality of the pupils' oral and written English. The subject presents a unique opportunity for training in clear, precise statement and in neat, orderly written work. In particular the teacher should make sure that the pupil has mastered the meaning and the spelling of the terms used in the mathematics classes.

I. Experimental Geometry

Brief review of Experimental Geometry of Grade VIII, taken with ruler, protractor, etc.

Parallel lines
- considered as lines in the same plane running in the same direction, and never meeting
- related to equal corresponding angles
- constructed with the aid of protractor
- developed into experimental study of properties of parallelogram

The Pythagorean relation
- experimental establishment
- application to practical problems

Congruency of triangles
- experimental study of the cases sss, sas, saa
- recognition of triangle as stable unit of construction
- contrast with quadrilateral
- applications to indirect measurement of heights and distances

Similarity of triangles
- experimental study based on parallel lines
- application to measurement of heights and distances using scale drawings; correlation with map-reading
- significance of digits in reported measurements

Three-dimensional drawing
- correlated with Shop Work, if available
- scale drawing of elevations and plans
- three-view drawings

Supplementary topic
- experimental study, with formal proofs to be left to Grade X, of properties of triangles such as
  - the bisectors of the angles are concurrent
  - the right bisectors of the sides are concurrent
  - the altitudes, etc., of inscribed and circumscribed circles
  - the medians, centroid, centre of weight of a cardboard triangle

Suggestions

1. It is important that the ideas of approximation and degree of accuracy in measurement which were intro-

duced in Grade VII and extended in Grade VIII should be further developed in this grade.

2. The extent to which the aims of the experimental work are realized will be revealed in the pupils' ability to make practical application of the results of this work to problems within their experience.

II. Algebra

Introduction to algebraic symbolism
- the generalized number
- its presence in formulas
- evaluation of expressions by substitution of known values
- terms, powers, etc., made meaningful by numerical and geometric illustrations

Directed numbers
- use of signs to signify concepts of opposite direction or quality
- illustrations by loss and gain, thermometer readings, etc.
- graphical representation along a straight line

Addition and subtraction
- combining terms with like or opposite signs by sensing the idea of loss and gain, etc.
- developing rule for subtraction
- exercises involving expressions of 3 terms each, or less
- indication of addition and subtraction by signs of operation

Equations
- simple equations of first degree in one unknown
- meaning of the term "root of an equation"
- solution by means of axioms
- verification of solutions
- rule of transposition developed from numerous concrete illustrations
- integral, fractional, and decimal coefficients
- the simple equation applied to the solution of practical problems

Formulas
- changing verbal statements into formulas and vice versa
- consideration of formulas as equations

solution for one variable when others have given values
changing the subject of a formula
construction of tables from formulas

Multiplication and division

operations with numbers having numerical and literal coefficients
rule of signs for directed numbers
index laws for positive integral indices
applications to monomials
product of a binomial or trinomial by a monomial
common factor of simple expressions
product of two binomials
square of a binomial
square root by the formal method—algebraic and arithmetical examples

Supplementary topics

factoring trinomials
factoring the square of a binomial and the difference of two squares

Suggestions

1. The various rules referred to in the foregoing topics should always be preceded by numerous concrete examples. From these, under the guidance of the teacher, the pupil should arrive at the rule as summarizing the results of his work.
2. It is important that pupils early establish the habits of verification of results and of accuracy and good form in algebraic statements.
3. The teacher is reminded of the interest attaching to historical and biographical references and to suitable illustrations of graphs, formulas, etc., from current literature.

III. Arithmetic

Fundamental skills

maintenance and extension of facility in oral and written computation with whole numbers, fractions, decimals, and percentages, together with necessary remedial work
factoring to obtain square and cube roots

Measurement

- review of units of linear, square, cubic, and liquid measure, and of weight, as the need arises in the solution of problems
- review of circumference of circle and of area of rectangle, triangle, and circle
- understanding of the terms arc, chord, sector, tangent, etc.
- area of parallelogram, trapezoid, sector of circle, cylinder
- volume of rectangular solid, including lumber in board feet
- practical applications of the foregoing
- significance of digits in numbers obtained by measurement and in numbers obtained in calculation from measurements
- rounding off of decimal fractions and computation with approximate numbers
- supplementary topics
  - surface and volume of prism, pyramid, cone, and sphere

Graphs

- review of circle graphs taken in Grade VIII
- construction of circle graphs from given data
- review and extension of line graphs (see suggestion 3 below) of formulas such as $C = \Pi\ d$, $A = \Pi\ r^2$, etc.

Commercial arithmetic

- problems related to buying and selling
  - trade and cash discount
  - mark-up of goods
  - profit and loss
  - commission
- problems related to banking
  - simple interest
  - promissory notes
  - instalment payments
- problems related to property
  - taxes
  - fire and casualty insurance
  - mortgages
  - interest on mortgages

problems related to investments
stocks and bonds
life insurance
compound interest

Suggestions

1. The teacher should refer to the suggestions regarding problem solving contained in the General Introduction.

2. In dealing with commercial arithmetic in this grade, the teacher should endeavour to see, first of all, that the pupils understand the meanings of the terms, and become familiar with the procedures commonly employed in everyday business transactions. Stress should then be laid upon facility in the solution of simple direct problems. Complicated examples should be deferred to later courses in Commercial Arithmetic.

   Thus, in the topic of compound interest, the pupil should be able to compute the interest on a given sum for two or three years and should also be able to use a table of amounts. He should not be expected to deal with problems involving present values.

3. Suitable material for the making of line graphs may be found in various aspects of conservation, such as:

   hydro electric power development in recent years
   depletion of forest wealth through fire losses and indiscriminate cutting
   river levels during flood periods
   decreasing crop yields through unscientific farming
   gasoline consumption at increasing car speeds
   braking distances at various speeds

4. Throughout this grade the social aspect of the mathematical topics is of prime importance. Consequently, the teacher should make every endeavour to relate the class discussion and the problems to be solved to the everyday experience of the pupil. Municipal taxation, for example, need not remain a matter of definitions and type problems. If the pupil is brought to see that the various services which he and his parents enjoy—roads, police and fire protection, garbage removal, snow cleaning and so on. and in particular, his own schooling—are a charge upon the whole community, and if he comes

to realize that his own parents either directly in their annual tax payments or indirectly in their monthly rent help to pay for these services, then the actual mill rate in his municipality and the assessment on his home will have real meaning. Similar considerations apply to the other topics of this section.

Grade Ten

General Observations

1. Mathematics in this grade becomes an optional subject. To the extent that other choices are available, the pupils who choose Mathematics should bring to its study some aptitude for and some interest in the subject.

2. Since, however, these pupils will ordinarily have diverse objectives, there arises in this grade the need for alternative courses in Mathematics in so far as limitations of enrolment, accommodations, and teaching power make such parallel courses practicable. Subject to these limitations, provision should be made for the following groups:

   (a) those pupils who have college or professional aspirations and intend to continue the study of mathematics into Grade XIII. The requirements of this group are obvious—a good grounding in elementary Algebra and Theoretical Geometry, preparatory to further work in these subjects in the later grades.

   (b) those pupils who hope to complete Grade XII but intend then to enter business or industry. These pupils need a more practical course, stressing commercial arithmetic or shop mathematics, and correlated with their commercial or shop option.

   (c) those pupils, usually approaching 16 years of age, who do not expect to attend school beyond Grade X, if indeed to complete that grade. In the limited time available, an attempt must be made to give this group certain basic mathematical knowledge and skills and also, if possible, some appreciation of mathematical discipline.

3. It is obvious that not all secondary schools are able to offer separate and distinct courses to suit the above groups. The Grade X enrolment will, in certain cases, be too small to make three or even two class groups feasible. In such a case the teacher has the difficult but not impossible task of so organizing his work and adapting his teaching procedure that the needs of each group will be cared for.

   In other schools it may be advisable to combine groups (b) and (c). This should present no particular problem. In the larger high schools and in vocational schools it may be possible to offer different courses to all three groups.

4. It should be emphasized once more that Curriculum Committees have the responsibility for working out the details of the mathematics courses best suited to the varying needs of the pupils in the schools under their jurisdiction.

5. The outlines of courses I, II, and III which follow are presented for the assistance and general guidance of the local authorities. They are intended particularly for group (a) and group (b) above. For the pupils of group (c), it is suggested that local authorities choose the portions of courses II and III best suited to their more practical interests and more immediate needs.

Course I—Algebra and Geometry

The objective of this course is to review and extend the Algebra begun in Grade IX and to make a reasonable start in Theoretical Geometry—in other words to prepare the pupil for the programme in Mathematics of Grades XI, XII, and XIII of the General Course as outlined in Circulars H. S. 12 and 13.

Geometry

A brief review of the mathematical terms and procedure used in the Experimental Geometry of Grade IX. The review of the mathematical facts discovered in that course should be incorporated in the Grade X and later courses as they develop.

Propositions 1 to 19 and 23, 24 of Book I. (Propositions 20 and 21 may be taken as deductions; proposition 22 may be accepted as read; proofs for propositions 5 to 10 should be accompanied by practice in accurate construction with straight-edge and compasses.)

Suggestions

1. There should be emphasis on the analysis of deductions and on the development of facility in the logical statement of proof. To this end, a discussion of critical thinking, the nature of proof and the application of its fundamental principles to everyday problems should precede and accompany its use in formal mathematical reasoning.
2. The formal solution of construction problems may be taken as a supplementary topic.

Algebra

The Algebra of Grade IX should be reviewed and extended to include the topics outlined in Circular H. S. 12—namely:

review of the Algebra of Grade IX
type products and simple factoring
applications of factoring
equations with brackets and fractions
long multiplication, short and long division
equations of the first degree and word problems with one and two unknowns
coordinate graphs
further factoring and applications

Course II—Commercial Mathematics

This course is intended to suit the needs of those pupils who do not desire to prepare themselves for the mathematics of Grade XIII but who wish further mathematical training in preparation for business life. These pupils intend to obtain a Secondary School Graduation Diploma in either the General or the Commercial Course; they may be taking meanwhile a Commercial Option or the full Commercial Course. Their Grade X programme in mathematics should be based, in general, on the outline suggested in H. S. 12, modified in the light of the Grade IX course which they have completed, and varied in detail to suit local requirements and to prepare them for such courses in mathematics as may be available in later grades.

Course III—Industrial Mathematics

This course is intended to suit the needs of those pupils who do not desire to prepare themselves for the mathematics of Grade XIII but who wish further mathematical training in preparation for industrial life. These pupils intend to obtain a Secondary School Graduation Diploma in either the General or the Industrial Course; they may be taking meanwhile a Shop Option or the full Industrial Course. Their Grade X programme in mathematics should be based, in general, on the outline suggested in H. S. 12, modified in the light of the Grade IX course which they have completed, and varied in detail to suit the particular shop courses which they are taking and to prepare them for such courses in mathematics as may be available in later grades.

SCIENCE

Aims

The aim of the course is to contribute to the healthy growth of the pupil, from childhood to citizenship in a democratic community, by using the material, method, and attitude of science. Knowledge is a necessary step towards the attainment of the objective, but knowledge itself is not the principal aim nor is it an end in itself. The teacher of science aims to develop a person who will possess:

1. An understanding of the natural environment of man so that he will appreciate its complexity, its order, and the need for conserving natural resources;
2. Desirable attitudes of mind—especially curiosity, suspending judgment, tolerance, willingness to be convinced by evidence, looking for natural causes, and the connection between cause and effect;
3. The power and habit of "straight thinking"—of seeing a problem, collecting and weighing evidence, reaching a sound, sincere conclusion—and the emotional maturity which results from this;
4. Good habits of work and self-expression, especially accuracy, organization, and conciseness;
5. Good health habits;
6. An interest in reading the literature of science, in conducting hobbies, in exploring the branches of natural science, and in discovering the applications of science to work and life;
7. The ability to do simple tasks which require a knowledge of practical science in the home, in the garden, and on the farm.

Organization

A suggested course has been outlined for each of the four grades of the Intermediate Division. The courses for Grades VII and VIII, and for Grades IX and X, are set up as parallel courses which may be taken in alternate years since one is not a prerequisite to the other.

The courses are designed to assist curriculum committees or individual teachers to select topics suitable for each grade. Other topics may be substituted for those suggested, changes may be made in the content or order of any particular topic, or topics may be transferred from one grade to another.

Each course has been divided into parts A and B. Part A consists of topics which are of general interest to all pupils and for which material is available in any locality. Part B consists of optional topics in which the degree of interest may vary in different localities. The number of optional topics taken will depend upon the time and the resources available and also upon the interests of the teacher and the pupils. A minimum of two options for each of Grades VII, VIII, and IX and of four options for Grade X is suggested. Options related to agriculture will be selected by schools in which science as applied to agriculture is taught.

In vocational courses in Grades IX and X, the suggested courses in science may be modified to meet the needs of the particular course, or the science courses for vocational schools (Circular Tech. 17) may be used.

The course is presented in the form of problems. This method should challenge and interest the pupil, encouraging observation, investigation, reading and research, experimentation and generalization. An attempt has been made to organize and integrate topics studied in the preceding grades and to encourage pupils to reach broad generalizations from previous observations.

An effort has been made to unify the various topics into a related whole. For example, plants, soil, air, and water are taken together and their interdependence established. Emphasis has been placed on the adaptations which plants have evolved to meet special needs or conditions.

The type and size of the community must be considered when problems, illustrations, and applications of the scientific principles are selected. For example, as sources of plant material urban pupils may use lawns, gardens, and parks, whereas rural pupils may use the fields.

Science Notebooks

Science notebooks can be a valuable aid in stimulating the pupils' interest, effort, and activity. They are records of how the pupil organizes his thinking; they help measure the results of teaching. They can be used to encourage habits of accuracy, neatness, and clear expression and to give the pupil an opportunity of applying his special interests (in drawing, writing, collecting) to the learning of the subject.

A systematic arrangement should be adopted for keeping records in the notebook. Each day's record should bear the date and appropriate heading. Diagrams should be analytical, and designed to show structure. Elaborate drawings which emphasize shading and colouring fail to achieve the objective or to justify the time involved. However, colour may be used effectively for contrast and vividness in illustrating such items as the mercury in a thermometer.

The teacher can help the pupils to keep good notebooks by setting up standards, by guidance, and by encouragement. The copying of notes from the blackboard, books, or dictation is seldom justified. Blank-filling exercises of the workbook type help in the correct use of terminology but rob the pupil of opportunities to practise clear expression. The pupil's notes in many lessons may be the answers to a series of questions on the blackboard. In others they may be an expansion of a summary of headings on the blackboard. Early in each term a pupil should select a topic for development in his notebook by appropriate clippings, drawings, and notes. Examples of such topics are: Great Women of Science, Eminent Living Scientists, The Story of a Plant, A Visit to the Forest, We Live in Air, Gardens, Conservation, Saving the Soil, Using New Ideas, Science Helps the Farmer.

A Suggested Teaching Procedure

No course of study is a substitute for inspirational teaching. The personality of the teacher far transcends any organization of material or the foundation of any method.

Presenting the Problem

Ask questions designed to relate the unit of study to the real life experiences of the pupils. Stimulate interest in the unit

by discussion. List on the blackboard questions raised during the discussion which the pupils cannot answer or should investigate further.

Gathering Information

Working in small groups, pupils should gather information from reference books, perform experiments, take field excursions, or interview informed persons.

Making a Generalization

The pupils must be given opportunities to use the generalization for predicting and explaining. For example, after the pupil learns that plants require sunlight, he should be able to forecast or explain the poor growth of most plants under trees. This is an important step in the learning process which helps the pupil to transfer his learning to his daily life.

Equipment

The following minimum equipment should be in every elementary school. Some of the items may be easily improvised; others may be purchased locally from drug stores. The quantities indicated are recommended for the use of small groups in the smaller schools. The cost will be approximately fifteen dollars.

Quantity	Description
12	pyrex test tubes, 6″ x ¾″
6	pryex beakers, 150cc capacity
3	watch glasses, 3″, to cover beakers
6	pyrex florence flasks, 250cc capacity
6	rubber stoppers, 2 hole, to fit above flasks
3	pyrex flasks, 500cc capacity
3	rubber stoppers, 2 hole, to fit above flask
1 lb.	glass tubing, 5mm inside diameter
3 ft.	rubber tubing for connections, to fit glass tubing
3	evaporating dishes, 7cm diameter, no. 00
3	test tube holders
3	alcohol lamps, 4 oz. capacity
1 qt.	methyl hydrate
2	pairs crucible tongs
2	glass funnels, 75mm
1 pkg.	filter paper, to fit funnels

1	iron tripod with screen
1 pkg.	lime water tablets
1	test tube brush
4	candles

Grade Seven

Part A

Plants are Important to Us

How has man made use of plants?

How is man dependent on plants for home building, clothing, food, beautification, drugs, fuel, fodder, oils, soil improvement, other needs?

Prepare an oral report describing the history, development, and use of any plant mentioned above.

How are plants adapted to their natural environment?

Study two plants to determine how each of these parts adapts it for survival—root, stem, leaf, flower, fruit, seed.

What are basic needs of plants?

Have pupils conduct experiments or recall observations to prove that plants require water, light, warmth, air, minerals.

Why is growth rapid in springtime, slow in late summer and autumn, and slowest in winter?

Why do plants have roots?

What are the two chief functions of roots?

What happens to the position of a plant when water washes away the supporting soil from its roots?

What happens to the level of water in a bottle when a complete plant is placed in the bottle with its stem surrounded by a one-hole stopper or plasticine to prevent evaporation?

Why do plants have root hairs?

Germinate grain or radish seeds between moist blotters and observe root hairs.

What happens if they are exposed to the air?

How do root hairs absorb moisture?

Experiment with slices of slightly shrivelled beet (i) in water, (ii) in a salt solution.

Conduct a second experiment with a tube attached to an egg in a glass of water.

Relate the results of the above experiments to the absorption of water and minerals by root hairs.

Make reference to the soaking of prunes and the crisping of celery.

Why do plants have stems?

How does the shape of the tree affect the size of the areas exposed to the light and air?

Why do some plants have woody stems, herbaceous stems, erect stems, runners, climbing stems?

Place the stem of a plant bearing leaves and, if possible, a white flower in a glass jar of coloured water. After several days observe a cross-section of the stem or the colour of the flower.

Why do plants have leaves?

What leaf arrangements can you find?

Why are there leaf stalks on some plants?

Why are leaves generally thin and broad?

In what ways is the leaf like a factory?

What is transpiration? Show it experimentally.

Why do leaves droop and trees sometimes shed them in dry weather?

Why do trees shed leaves in autumn?

Why do plants store food?

Test plants for

starch—with weak iodine solution

oil—by hitting a peanut or soybean on a sheet of paper with a hammer and obtaining a grease spot

sugar—by tasting

protein—by smell when burning or decomposing beans or peas (Compare the odour with that of burning feathers or wool.)

Find examples of plants which store food in seed, fruit, leaf, stem, root.

How does this contribute to the survival of each?

Why does the potato shrivel when it sprouts?

How do some plants produce new plants like themselves?

Elicit by discussion the various ways of growing new plants.

Have pupils carry out the following activities to show that new plants may be grown from various portions of the parent plant.

Germinate many types of seeds such as peach pits, chestnuts, beans, maple key, and carrots. Review the conditions of germination—heat, moisture, oxygen.

Grow plants by planting portions of roots such as cut-off tops of carrots, beets, and parsnips.

Grow a new plant by placing in water a portion of a root such as sweet potato. Plant may be started in February and planted outdoors after danger from frost is past.

Grow plants by placing in water cuttings of stems such as the willow, the African violet, and the geranium.

Grow plants by planting in soil bulbs such as the onion, narcissus, or hyacinth. Note formation of bulblets.

Why do plants have flowers?

Examine flowers such as the petunia, tulip, buttercup, or lily to find the essential reproductive parts—stamens and pistil.

Examine the pollen grains with a hand lens. Transfer some pollen from the stamen to the pistil. Discuss insect and wind pollination.

Give a simple explanation of fertilization.

How do seeds develop into new plants?

Examine soaked beans, chestnuts, morning-glory, or corn seeds to find the embryo and its food supply. Note the seed coats for protection.

Grow seeds in a tumbler garden prepared as follows: Roll a clean blotter and slip it into a tumbler so that it lines the inside. Place some cotton batting or paper towelling at the bottom. Add enough water to thoroughly moisten the blotter and the cotton. Take a few seeds of various kinds that have been soaked previously for at least one day and push them down between the blotting paper and the outside wall of the tumbler. Then fill the cylinder formed by the blotting paper with sawdust and keep the blotting paper moist. Pupils keep records by making outline drawings as the seeds sprout and grow.

Keep under observation a growing bean plant or green twigs with opening buds to note increase in length at or near the tip.

Grow a lemon or orange tree from a seed in soil.

Learn to identify harmful plants such as poison ivy, poison oak, poison sumac, ragweed.

The Soil That Feeds Us

How does man's very existence depend on the soil?

How do each of the following contribute to the formation and change of soil:

heat of the sun, water in rivers and lakes, rain, ice, freezing, wind, plants, volcanoes, glaciers?

Experiments: (i) Fill a bottle with water, allow it to freeze. Compare this with water that freezes in the crevices of a rock. (ii) Heat a stone or piece of glass over a flame or an electric hot plate. Then plunge it into very cold water.

What are the component parts of soil?

Feel sample of garden soil for rock particles.

Examine with a lens, noting the particles of rock and organic matter.

In a tall slender bottle, or graduated glass jar, mix soil with water, shake it, and allow it to settle.

Examine if possible the sides of excavations, cliffs, or gravel pits for layering.

Examine sand, clay, and loam, noting especially the size of the particles.

Measure a quantity of loam soil, and place it in a pan over an electric hot-plate or flame. Observe the smoke-odour, change in weight and volume.

What is meant by the water-holding capacity of soil?

Pour water on a sponge or dip it in water. Note the change in weight.

Pour equal amounts of water on flower pots of sand, clay, loam, to find which has the greatest water-holding capacity. Catch the water draining off.

Show how the addition of organic matter affects the water-holding capacity.

How does water reach the surface soil?

Place tall bottles, glass tubes, or lamp chimneys containing dry sand, dry clay, and dry loam soil in a shallow dish of water. Observe the height to which the water rises in each. Relate this to soil outdoors and to plant growth.

Discuss the effect of mulching on evaporation.

Why is air necessary in soil?

Recall what happens to plants under flooded conditions.

Pour water on a pot of dry soil. Watch for bubbles to prove that soil contains air.

Discuss the ways in which gardeners improve the aeration of the soil.

What constitutes good soil?

Discuss the role of the water, air, organic matter, and mineral matter in contributing to the fertility of the soil.

Discuss the importance of earthworms.

How is soil fertility destroyed?

Discuss the effects of repeated cropping and of leaching.

Pour water through the soil and evaporate the residue.

How does man improve the soil?

Show the effects of commercial fertilizers and organic matter on plants.

How are soil and plants interdependent?

How have soil conditions contributed to concentrations of population in particular parts of China, India, Southern Ontario?

Nature's Great Gift—Water

How does water help us?

How does water provide enjoyment, power, transportation? Keep us clean, and dispose of waste? Affect the food supply of humans, plants, animals? Affect our weight? Affect our comfort? How does ice help us?

How much water is there on the earth?

From a globe, have pupils estimate the proportion of the earth's surface covered with water.

Using cross-sections of land formation, show the occurrence of water tables, artesian wells.

Where is water present?

Place a metal cup containing ice-cold water in the classroom and observe the condensation on the outside shiny surface.

Squeeze some juice from a fruit or vegetable and, if possible, distil it. Relate the fact observed to the needs of plants.

Repeat with some fresh meat. Discuss the shrinkage of meat when fried. Relate the fact observed to the needs of animals.

Make a chart showing the water-content of several foods.

Is water always a liquid?

Discuss the freezing of water, the melting of ice and snow, the evaporation of water, to show the very common changes of state in nature, i.e., liquid to solid, solid to liquid, liquid to gas. Briefly discuss the characteristics of each state.

Conduct an experiment to show the change of state when water boils and when steam cools. Explain distillation. Explain the formation of rain and dew.

What happens to all the rain that falls? Using an aquarium or a vivarium with a glass cover, illustrate the water cycle. (Water vapour condenses on the lower side of the glass.)

Guide pupils to reach the conclusion that condensing water and melting snow keep rivers and lakes supplied with water.

How does water make things disappear?

Conduct an experiment to show the relative solubility in hot and cold water of such solid substances as sugar, salt, soda, fertilizer, and chalk. Refer to minerals and fertilizers in soil. Relate this to the availability of plant food in soil.

Conduct an experiment to show that an undissolved solid may be separated from dissolved materials. Filter a mixture of soil and water. Relate this to soil erosion and the depositing of sediment in lakes.

Conduct an experiment to show that the filtrate from muddy water contains dissolved minerals. Refer to absorption of minerals by roots and to soil depletion.

Why is the water in the ocean salty? Why does distillation purify water?

To show that air is dissolved in water, let some fresh water stand in a glass until bubbles collect on sides of glass.

When is water called "flat"? Why does boiling make water "flat"? How may this "flatness" be corrected?

In nature, why is it important that water should contain air?

Why is water "hard"? "soft"?

With a medicine dropper, add some soap solution to a measured volume of tap water, one drop at a time, until the foam remains on the surface after shaking vigorously. Repeat test with equal volumes of rain water, distilled water, salt water, and water from neighborhood wells. A soap solution may be made by dissolving about one-tenth of a bar of soap in a half-pint of water.

Food

What kinds of food do humans eat?

Question the pupils to show that our food comes from many kinds of plants. Include the plant sources of such

products as maple sugar, molasses, flour, chocolate.
Similarly have pupils develop a list of foods from animal sources.
Elicit the fact that our food also contains minerals that come from neither plants nor animals.
Have the pupils report foods of people in other lands. Aim to develop a tolerant understanding of difference in human behaviour.

What substances are common in foods?

Six kinds of substances called nutrients have been found to be common in many foods. Refer to topic, "Milk".

Using the following simple tests for nutrients, examine various foods of both plant and animal origin for the presence of: sugar (taste), starch (iodine), fat (translucent spot on paper), protein (odour on burning), minerals (ash left from burning), water (hold a cold tumbler over food being heated).

Some animals thrive on plant food; others remain healthy on animal food. Explain.

Discuss the role of other substances called vitamins. Prepare charts showing vitamin content of common foods.

What are "Canada's Food Rules"? Consult publications distributed by the Ontario Inter-Departmental Nutrition Committee, 150 College Street, Toronto 5.

For what purposes do human beings require food?

List foods which contain large amounts of protein, starch, fat, minerals, water, vitamins.

List foods which promote energy, growth, fat, strong teeth and bones.

What purpose does each serve in body building or body maintenance?

Why are the following called "protective" foods: milk, fruit, vegetables, eggs, fish, and meat?

Why do we need a balanced diet?

What are the chief causes of food spoilage?

What are some methods of food preservation?

How does food preservation contribute to the conservation of our food supply?

Discuss: "All food comes directly or indirectly from green plants": "All energy comes from the sun".

"Poisoning in the home through foods, beverages, medicines, disenfectants, insecticides, and cleaning preparations must be regarded as an everyday danger if it is to be eliminated completely."

Discuss hazard of eating wild mushrooms, unwashed fruits and vegetables, improperly cooked meat (tapeworm and trichina).

Exhibit household chemicals which are poisonous. Stress importance of labelling and proper storage precautions. Have pupils arrange a model medicine chest with the top shelf labelled *"Poison"*.

Study common antidotes, e.g., for rat poison, matches, and insecticides—salt water, mustard, or the white of eggs; for tincture of iodine—a solution of starch and water; for acids—soap, lime water, or baking soda in water; for alkalies—lemon juice or vinegar followed by soothing oil.

Conservation of Soil and Water

"Conservation means the wise use of our resources to ensure that they will always be available for our use and that of future generations. Conservation measures are now necessary because the balance of nature has been disturbed by man. We must attempt to restore that balance as well as possible under the limitations imposed by modern civilization."

What are the major natural resources of Canada?

What is meant by (i) "cooperation with nature" and (ii) exploitation of natural resources?

Why is there an urgent need to conserve water?

Locate farms or communities in your district in which the water supply is deficient. Why?

How is water stored in nature?

Recall your experiments under the study of soil to illustrate the effects of organic matter on water-holding capacity.

Investigate the ways in which the following assist in this storage: farm ponds, dams, forests and other vegetation, beavers.

Why are floods and water shortages more prevalent now than in pioneer days without any noticeable change in the amount of precipitation? Secure information from older residents.

What types of damage are caused by floods and by water running off the land unchecked? Prepare a small bank of soil with a thirty degree slope in a large shallow box

or outdoors. Cover half with sod. Water with a sprinkling can from a height of several feet to simulate rain. Note erosion, appearance of run-off, and retention of water by the sod.

Why is the topsoil considered a very important natural resource?

What two great forces cause soil erosion?

How can the conditions resulting in loss of topsoil and water be prevented?

Ascertain where trees should be planted or retained. Why?

Briefly discuss good cultural practices which the farmer should adopt.

Investigate ways of preventing gullies from forming and enlarging.

Find reasons why many swamps should not be drained.

Investigate the flood-control measures being planned and carried out in your part of the province.

How may a tree-planting programme be carried out?

Ascertain where trees for rural planting may be secured, the best time for planting, the methods of planting on different types of terrain, the care before and after planting.

Where possible, arrange for a school reforestation plot.

Why is the farm woodlot vitally important in our conservation programme?

Show the values of the farm woodlot in preventing the loss of topsoil and water.

Why should farm animals not be allowed in the woodlot?

Investigate the ways in which the farmer may keep the farm woodlot of maximum value.

Part B

Home and School Gardening and Forestry Plots

Construct and operate a hot bed and cold frame at the school. Encourage pupils to start one at home.

Prepare outdoor window boxes for your school or home.

A small school garden may include one or all of the following activities.

Planning the garden early and having pupils draw a plan to scale.

Studying the soil type, preparation of the seed bed, methods of fertilizing, varieties of plants to use, methods of seeding.
Growing vegetables.
Propagating flowers, using seeds, bulbs and cuttings.
Demonstrating the value of commercial fertilizers on garden or farm crop.
Growing small trees for future planting on the school grounds or to take home.
Make arrangements with the Board to keep the garden free of weeds during the summer. A weedy garden is a poor advertisement for your school and your work in Agriculture.

Encourage the pupils to take an active part in planning and caring for their home gardens.
Draw a plan of a vegetable and flower garden suitable for the average family. Study books or bulletins for suggested garden plans.
Briefly discuss harvesting and storing of vegetables for winter use.

Participate in forestry plot planting and care.
Plant bulbs outdoors in the fall for spring bloom. Plant daffodils, narcissus, and hyacinth in flower pots for indoor bloom during the late winter or early spring.

School and Home Beautification

How can we make our schools and homes more attractive?
Observe and describe the methods which have been used to improve neighbouring homes or schools.
Discuss various plans and decide on one which suits your school or home.
Estimate the labour and cost needed to put it into effect.

How may we improve the lawn and the fence?
Consider levelling, fertilizing, seeding or sodding, cutting and weeding the lawn.
Consider removing, or repairing and painting the fence.

What factors determine the selection of trees, shrubs, flowers, and grasses?
Consider the soil, water supply, weather conditions as they may affect the plants.
Examine seed catalogues, current literature, and magazines for suggestions.

Make a survey of trees, shrubs, and flowers which thrive in your community.

Discover what suitable materials may be obtained locally or from nurseries. Consider the location, decorative purpose, size, hardiness, availability, cost, and chances of survival of plants selected.

How shall we plant and care for these?

Secure information from catalogues, magazines, reference books, and growers.

In the case of shrubs or trees, consider time of planting, depth, protection of roots before planting, firming, watering, pruning, supporting.

Secure help where available from the community.

How may we assist in keeping our school clean and attractive?

What provision can be made for summer care in weeding and cutting the lawn?

What winter protection should plants receive?

Rocks and Minerals are Important to Us

What are the chief kinds of rocks found in the earth's crust?

How has man used rocks in construction work?

Make a classroom collection of rocks.

Under the headings, formation, appearance, and location (Ontario), describe heat-formed or igneous, water-formed or sedimentary rocks. Make reference to the formation of clinkers in the furnace to explain how igneous rocks are formed.

Under the headings, appearance and use, discuss limestone, sandstone, gypsum.

What is the geological story of your community?

What are some economically important mineral treasures located in the solid earth? What property of each makes them useful to us?

Visit a mine, quarry, or brick yard in your locality. Describe the making of some rock or clay products such as Portland cement, lime, brick, or pottery, if there is a plant or a yard in your vicinity.

Describe the processes by which a mineral in your community is mined or recovered.

If further refining or processing is required, discover where this is done and why.

Trace its journey from its source to the consumer.

Discuss the economic importance of Ontario mines as a means of employment, as providing materials for industry, as a source of wealth.

A Safe Water Supply

What are the sources of our water for drinking and washing?

Investigate the sources of water in both urban and rural areas.

Compare the sources as to adequate supply, safety, and permanency.

List ways of conserving our water supply.

In what ways may our water supply become unsafe?

Learn ways in which rivers and lakes may become contaminated.

Survey your community for sources of contamination.

What diseases may be caused by contaminated water?

How can we make our water fit for drinking?

Pour some muddy water into two tall jars or bottles. Add dissolved alum to one and compare the rate of clarification.

Filter some muddy water through some well-washed sand. An ordinary lamp chimney with a cloth tied over one of the openings and filled with sand makes a good filter.

Why are spring water and well water usually quite clear?

To discover the importance of aeration, observe air bubbles which form inside a glass of water which has been allowed to stand. Compare its taste with water fresh from the tap.

Discuss the importance of chlorination.

Visit the local water plant.

What is the usual source of water in rural areas and at summer cottages?

Survey local wells for sources of contamination.

Study the advantages and disadvantages of different types of wells.

What danger is there in using water from a shallow well?

What precautions are advisable before using a rural water supply? Stress boiling or the use of chlorine or other tablets.

Send a sample to the Department of Health for testing.

Why are forests important to us?

Make a chart of forest products.

Discuss the importance of forests as sources of wages and taxes.

Review the role of forests and swamps as natural reservoirs of water.

Discuss the forest as a home for wild life and as a playground for tourists.

Where are the forest areas of Ontario and Canada?

On a map mark the communities in this province mainly supported by forests.

On an outline map mark the provincial and national parks.

Consult authoritative references to discover the areas which have been deforested.

How are our forests endangered?

Report on wasteful cutting methods in lumbering.

Discuss wind damage to trees left unprotected.

Find out the reasons for certain native trees becoming scarce.

Consult references to find the annual loss in dollars caused by forest fires, diseases, and insects.

How are forest fires prevented?

Consider the ways in which people travelling through our forests can help to prevent fires.

Discuss measures taken by governments to prevent forest fires.

How are forest fires controlled?

See "Timagami Ranger" and other available films.

Make a report on methods and equipment being used to detect and fight forest fires.

How are our forests to be maintained?

Discuss "clear cutting" verus "selective cutting." The former generally means removing every saleable tree; the latter means cutting about twenty-five percent of the saleable trees followed by a similar cutting every five or six years.

Locate the reforestation stations of the Department of Lands and Forests, and secure information concerning the work done there.

Survey your district and consult topographic maps to determine areas which should be reforested.

Visit or take part in a school or community reforestation project.

Grade Eight

Part A

Animals—Our Friends or Enemies

Characteristics of animal kingdom.

Teach or review the basic needs of plants. What are the basic needs of animals? How are plants and animals alike, different?

How does man depend on animals?

List the purposes for which man domesticated animals? Enquire how he has improved these animals.

How does he make use of wild animals? Give examples.

Why is conservation of certain wild animals desirable?

Why is fur-farming important? What animals are usually raised?

Make a list of animals, including insects, which are helpful, harmful to man.

Insects

Observe and examine a living grasshopper to discover how it is adapted for locomotion, protection, feeding, breathing, seeing.

Study at least one other insect such as the house fly, honey bee, or mosquito to show variation in external features, feeding habits, and life history. From a pond collect mosquitoes in various stages and keep a generation in a screened jar or aquarium.

List a few insects of your locality injurious to plants, to animals, to household goods, and to man.

In each case consider the nature of the injury and the methods of control.

What are the general characteristics of insects, reasons for dominance, and control factors?

The balance of nature

Lacking the keen sight of the hawk, the sharp claws of the cat, the strong teeth of the tiger, the endurance of the wolf, the great strength of the bear, the tough hide of the rhinoceros, the protective colouration of the grouse,

the speed of the deer, or the sting of the bee, what has enabled man to survive in the ruthless and persistent struggle for existence? Consider intelligence, language and communication, opposable thumb, fire, defense mechanisms (weapons, sprays, poisons).

Discuss the balance of nature in the animal kingdom; food chains; interdependence of soil, plants, and animals.

Air

In what ways is air essential to all life?

Where does air exist?

Have pupils plunge a water glass, mouth down, into a pail of water.

Have pupils pour water over a pot of soil and watch for bubbles.

Have pupils gently heat a beaker or glass of water and watch for bubbles.

Relate the presence of air above the earth, in the soil, and in the water, to the occurrence of life in those places.

Why do aviators carry oxygen when flying at high altitudes?

Is an empty bottle really empty?

Place a funnel with a small opening in the neck of a bottle. Seal around the opening. Pour water into the funnel.

Perform pupil-suggested experiments.

Does air have weight?

Suspend a light yard stick by a string around the centre. To one end tie two large inflated balloons or football bladders. Balance the stick. Let the air out of the balloons and note the result.

Weigh a tire tube. Then inflate it and weigh it again. How much would the air in your classroom weigh?

Does air exert pressure?

Place a sheet of paper over a full glass of water and invert it. Note that this experiment helps to show that pressure is exerted in all directions.

Place finger over the tube of a bicycle pump and press handle down.

Since air has weight and exerts a pressure of about 15 pounds per square inch, why are we not crushed by air pressure?

How can we prove that there is moisture in the air?
Evaporate a small quantity of water. Where does it go?
Breathe on a cold window pane and observe condensation.

Mammals

Study or review two animals of your area—squirrel, beaver, ground hog, rabbit, horse, dog, or cat.

Under the following headings show how each is adapted for its mode of life: locomotion, feeding, breathing, external features.

Suggest the advantages of the following special adaptations: the long neck of the giraffe, the trunk of the elephant, the soft paws of the cat, the snout of the pig; the horns of the deer, the spots of the fawn, the scent of the skunk, the quills of the porcupine; the fur on the bear, the absence of fur on the elephant.

Birds

Have pupils make a list of the purposes for which man has domesticated birds. Give examples. By reading or enquiry find how man has improved these birds to meet his needs.

Identify birds common to marshlands, meadows, orchards, evergreen bush, hardwood bush, rivers and lakes.

List reasons why our wild birds are important in the balance of nature.

Consider seed-eaters, flesh-eaters, carrion-eaters, and insect-eaters.

What can be done to induce birds to live around the house and garden? Maintain bird bath and feeding station at home and at school. Refer to the work of Jack Miner.

Study two birds, e.g., hen, sparrow, or pigeon. Under the following headings show how each is adapted for survival: feathers—structure and function, feet, beak, eyes, body shape, bones.

How do the following adaptations fit birds for their mode of life: the hooked beak of the hawk, the broad beak of the duck, the stout beak of the hen, the chisel-like beak of the woodpecker; the webbed feet of the goose, the long toes of the hen, the claws of the hawk, the long legs of the heron; the duller colour of many female birds, the white of the ptarmigan, the gray and brown of the grouse?

Fish

List the different kinds of fish caught in your locality or found in a fish store.

How do fish contribute to the tourist industry? Make a list of "game" fish sought by the tourist.

Using your aquarium observe the living fish to learn how it is adapted for locomotion (note scales, fins, body shape), protection, breathing, feeding.

The Frog

Study a living frog under the following headings to show how it is adapted to its mode of life: external features, habits (breathing, locomotion, feeding), life history.

Discuss the economic importance of frogs and toads.
"It is said a toad is worth $20.00, a chickadee $10.00, and a hawk $30.00 per year." Find evidence to support this.

The Snake

Study the snake under the headings: external features, locomotion, feeding, economic importance.

Having studied insects, mammals, frogs, fish, snakes, review and compare how each has developed adaptations suited to its mode of life.

Fresh Air and Health

"Experiments indicate that the most important point in room comfort is to keep the temperature at 68°F. Sufficient fresh air should be admitted to maintain this temperature and to remove bad odours."

How does breathing change air?
Perform an experiment to show the effect on lime water of the air we breathe out. Compare with the results of a similar test with burning in unit on "Air".
Recall what happened when we breathed on the cold window pane.

What is the effect of stale air upon us?

How is the air in the home and in the classroom kept fresh?

How do we know that there are impurities in the air?
Carefully rub vaseline on three or four pieces of glass and place in various locations inside and outside of your school and home. Examine them carefully after two or three days.

Why are walls darkened above radiators?
What are some of the sources of impurities in the air in your home and in your community?
Make reference to the effects of coal gas or of carbon monoxide.

What is the effect of the water vapour in the air?
Inhale through a pad of absorbent cotton for ten minutes and note the effect on the throat.
Discuss the effect of humidity on human comfort.
Investigate the ways in which the humidity of the air in your school and homes may be controlled.

How does temperature affect your health and efficiency?
Have pupils check and record the temperature of their homes and classrooms regularly.
Have pupils note effect on themselves when temperature of room is increased.
Discuss the drying of clothes, noting usual variation in time required on a windy day, on a warm day, in dry weather.

How does burning change the air?
Burn a candle in a closed sealer. When the candle goes out, invert the sealer and immerse it in water. Unseal under water. Observe result.
Float a candle on a pan of water. Light it and invert a glass over it making contact with the water. In each of these experiments note the proportion of air used, air remaining.
Have the pupils find the names of the three common gases present in the air in addition to water vapour.
Test with lime water the part left after burning.
Test fresh air with lime water.
Discover why the fire burns better when the draught is open.
Find out why campers cover their fire with sand when leaving.
Why should a person whose clothes are on fire be wrapped in a blanket?

What effect has heat on air?
Hold your hand over a flame, a radiator, a stove.
How does this movement of air affect the heating of our homes?
Relate the effect of heat on air to the causes and movement of winds.

Ascertain from reference books the proper room temperature for good health and good work.

Investigate air-conditioning systems and show how they produce clean, fresh air of correct temperature and humidity.

Weather

"The atmosphere is continually undergoing slight changes which cause changes in the weather. This daily condition of the atmosphere is called the weather. Climate is the average condition of the atmosphere over a period of time."

What are some changes that occur in weather?

How does the weather affect our way of living?

List six ways in which weather affects our actions each day.

Show how man's activities the world over are limited by weather conditions and climate. This topic may be correlated with Social Studies.

What are the main factors of which weather consists?

Record the temperature each day at the same time for at least two weeks.

By using a weather vane to determine direction and the Beaufort Scale for speed of wind, record these two factors each day at the same time. Examine, if possible, an anemometer and devise one of your own.

Make a rain-gauge and record the amount of rain which falls each day during the same period. If these observations are made in winter record the snowfall instead.

Describe the sky condition at the same time each day for the two-week period, employing the terms used by the Meterological Service of Canada. Make some reference to the types of clouds noticed. Collect pictures or make drawings of different kinds of clouds and label them.

After making the above observations for at least two weeks, make a list of any conclusions you have been able to reach regarding the relationship between the direction of the wind and the kind of weather experienced.

Attempt to forecast the weather each day. Compare with the newspaper forecast and the actual weather.

How does water affect our weather?

Teach or review condensation, evaporation, the various states of water, formation of rain and dew, and the water cycle as outlined under "Nature's Greatest Gift—Water" in Grade VII.

Discuss the circulation of water in nature, through the processes of evaporation and condensation (water cycle). Show how a taut hair, with grease removed, will change in length with changes of air moisture, and how a device for showing the amount of water in the atmosphere can be constructed with the hair as the gauge.

How does weather affect driving conditions?

Compare the distances required to stop an automobile going 20, 30, 35, 45, 55 miles per hour.

How would these distances be affected by water, ice, snow on the highway?

Why are worn automobile tires especially dangerous on wet streets?

Demonstrate the holding force of a rubber suction cup placed against the blackboard. Compare to the action of tire treads on wet pavement.

Collect pictures of different types of tire treads and discuss their merits.

How does weather affect walking conditions?

How can the ice on the sidewalk be melted quickly? Place equal quantities of chopped ice in two glasses of the same size. Add several spoonfuls of salt to one beaker. Compare the melting rates of the ice.

Discuss the relative merits of putting salt, ashes, or sand on icy sidewalks.

What precautions should be followed during a lightning storm?

Consider the danger of seeking shelter under trees or metal bridges.

Fire—Friend or Foe

"The use of fire is perhaps the greatest discovery man has ever made. By means of it he was able to keep warm when otherwise he might have perished of cold, to cook his food, and to extract metals from ores. Fire is indeed a good friend but a bad master."

What is spontaneous combustion?

Pour the following on a wad of cotton placed on a metal tray: boiled linseed oil—2cc, japan drier—5cc, turpentine —5cc. The cotton should be allowed to soak up the entire mixture. This should then be enclosed in dry cotton through which holes have been punched with a pencil to allow for the circulation of air. Place a thermometer bulb

inside and watch temperature changes. Do not expect the cotton to ignite in less than 30 minutes.

What care should be taken with paint-covered or oily rags, mops, polishing cloths?

Consider spontaneous combustion in relation to the heating of hay or grain and farm fires.

What precautions are necessary in using matches?

Discuss friction matches, safety matches, storage of matches, substitutes for matches, proper disposal of burning matches.

What hazards accompany smoking?

Demonstrate how a glowing cigarette may cause a fire. Collect newspaper clippings to show how cigarettes have caused fires.

Discuss throwing away lighted matches or glowing cigarettes, smoking in bed or in barns, methods of extinguishing matches and cigarettes.

Relate the above to forest and property conservation.

What dangers are present when gasoline and petroleum products are used?

Why do motorists turn off the engine when the gas tank is being filled?

Why do motorists not use a lighted match to look in the gas tank?

What are the dangers of operating gasoline motors in a closed room?

Why should people refrain from using gasoline or naphtha for cleaning clothing or removing spots?

Why should fly sprays not be used near a flame?

How are Christmas trees a fire hazard?

Ignite a small thoroughly dried evergreen branch held with tongs at arm's length.

Relate this to the dangers around the tree from the use of frayed insulation on electric wires, sparks, lighted matches, candles.

Encourage the safe and prompt disposal of Christmas trees.

What are the advantages of keeping the tree in a pot of water?

Why is care necessary in the use of coal as a fuel?

Half fill a hard glass or pyrex test tube with crushed soft coal. Insert a one-hole rubber stopper with a glass jet tube. Set up on a ring stand. First heat gently, then

very strongly. Test the gas for colour and odour. Ignite it after oxygen is driven out. (A teacher's demonstration.)

What care should be taken in banking and checking coal fires? In checking pipes for holes? In providing adequate ventilation? In storing ashes?

To what should attention be directed when fats and oils are used in cooking?

Pour olive oil and water together and shake to show that they are not miscible.

Heat some vegetable oil containing a few drops of water in an evaporating dish to indicate the spattering effect. (Use caution.)

Heat a very small amount of oil in an evaporating dish and then ignite it. Put out the flame by covering it with an asbestos pad. (Use caution.)

In view of the above experiments contrast the merits of applying water and of smothering when extinguishing fires.

Why should paraffin be melted in a double boiler and never in the oven?

Inspect your home and school for fire hazards. Report the results to parents and to teacher.

Are furnace and stove pipes clean, tight, rustless?

Is electric wiring well insulated? All worn out cords and electric equipment should be replaced. Electric cords or wires should not be placed under rugs.

Are oily mops and rags destroyed or kept in metal containers?

Are rubbish and ashes collected and kept in proper receptacles for prompt disposal?

Are matches kept in metal containers?

Are fire-places shielded with wire screens?

Are light bulbs too closely shaded with inflammable material?

Is there danger of clothes or curtains coming in contact with electric bulbs or heaters?

What should you do in case of fire?

In case of fire why is it essential to act quickly, warn others, notify the fire Department at once, keep windows closed, close doors behind you.

When passing through a smoke-filled room why should we crouch or crawl, tie a wet towel or handkerchief over the nose?

Map your path of exit at school and at home, and an alternate path to be used if your first path is blocked.

Locate the nearest fire alarm box or telephone.

How does a fire extinguisher operate?

Review the use of water and smothering to extinguish a fire.

Investigate the merits of fire resistant paints, fabrics treated with fire-retarding chemicals.

What dangers accompany the use of bonfires, fire-crackers?

Have pupils bring in newspaper clippings describing accidents resulting in fire or burns.

The Sun in Relation to the Earth

"All life on the earth depends upon the sun."

What gifts does the sun give us?

Recall that the sun is the source of our light.

Note that the sun is the source of heat both directly through its rays and indirectly through the heat energy stored in fuels and foods.

How does the sun affect plant life and our food supply? Consult references to find how sunlight improves our health. What precautions should be taken against excessive sun rays?

What is known regarding the nature of the sun?

Consult references to compare its size with that of the earth.

For the purposes of comparison make plasticine models of each.

Ascertain the speed of light and the time required for the sun's light to reach us. Compare with automobile travelling 50 miles per hour.

Consult references to find the nature of the sun, its temperature, and the origin of sun spots.

What changes take place in the sun's apparent position during the day?

Observe the sun's position in relation to a fixed object at rising, at noon, and at setting once a week for several successive weeks.

Place a piece of cardboard with a small hole in it on a south window in a place where sunlight showing through the hole will make a patch of light on a paper placed on the window sill or other suitable location. Mark the outline of the light patch at the same time each successive day for two weeks or more, noting its change in posiiton.

Compare the results with the height of the sun in the sky at the observation times.

What are the causes of the variation in the length of day and night?

Teach or review the causes of day and night.

In a darkened room perform an experiment with a candle for the sun and an apple, a tennis ball, or a hollow rubber ball with a knitting needle through it to represent the axis of the earth. Illustrate how the tilt of the axis to the plane of revolution and the yearly revolution of the earth about the sun give us the variation in length of day and night.

How can we explain the seasons?

Investigate how the angle of the sun's rays determines the amount of light and heat the earth receives.

In a dark room direct the light of a candle or a flashlight through a one-inch cardboard tube. Compare the area and the brightness of the light spot produced when the tube is held at an angle of 75° to 90° to the table with that produced when it is held on a 15° to 25° slant.

Hold the palm of your hand horizontally over a candle flame. Gradually turn the hand until it is almost vertical. At what stage was most heat received? Relate your observations to variations in the heating effect of the sun's rays at various seasons.

Summarize the causes of seasons by showing how the rotation and revolution of the earth and the tilt of the axis result in variations in length of the days and changes in temperature.

If latitude and longitude are not taught in Social Studies, they may be taken in connection with this topic.

Why are "time belts" necessary in a country like Canada?

Part B

Conservation of Wild Life

Make a list of the animals on which the Indians and the Eskimos depend?

Consider for what purposes they have been used.

Why was the supply not depleted?

What animals in your region were exterminated by settlers in order to establish farms?

Find why each was exterminated.

How was extermination brought about?
What animals or birds have become extinct?
Report how improvements endanger wild life.
Consider removal of trees and fences, cultivation, drainage, highways, water pollution, forest fires.

List animals or birds now in danger of extermination.
How may they be saved?

Of what benefit are birds such as quail and grouse; hawks, owls, and eagles; robins, woodpeckers, and chickadees; gulls and loons; goldfinch and sparrows; cardinals and blue jays.
Make lists of birds which should be destroyed, which may be destroyed.
Birds require food, shelter, nesting places, and water. How can we help them? Maintain a feeding station at home and at school.
Discuss the problem of cats and rifles with respect to bird life.

Debate whether wild life should be killed for sport.
What is a "game hog"?
Draw up a "Wild Animals Bill of Rights."

Make a list of fur-bearing animals, game animals, birds, and fish.
How do these contribute to the tourist trade?

What is the purpose of a closed season, a game preserve, payment of bounties, re-stocking of waterways, a limit on numbers taken?

Describe the work of the conservation officer, game warden, or park ranger.

Why should we practise wild life conservation?
How can each of us contribute to wild life conservation?

Livestock and Poultry

Name the breeds of livestock raised in your community.
Visit your local fall or winter fair and note the breeds shown.

What are the common breeds of livestock raised in Ontario?
Study briefly so that you can identify three breeds of horses, dairy cattle, beef cattle, sheep, and swine. (Pupils should not be expected to memorize detail regarding comparisons in sizes and weights.)
Why and how has man improved the breeds of livestock?
What is a pure bred? a grade? a scrub animal?

Name five common breeds of chickens raised in Ontario. Compare the breeds as to popularity in your area and as to general identification characteristics.

Why are hen's eggs important to man?

By examination study the structure of an egg.

Why are eggs graded and candled before being sold? Candle and grade some eggs.

Name the grades of eggs found in retail stores. What is the difference in the retail price of each grade at the time you are making this study?

What factors contribute to lowering the quality of an egg before it reaches the table of the consumer?

What constitutes a good hatching egg? Hatch some chickens in an incubator or under a hen.

Visit a hatchery.

Milk—The "Perfect" Food

Discuss the values of milk to the new born mammal, to growing animals and humans.

Why is milk called the "perfect" food?

List a number of milk products.

Examine milk as to appearance, colour, taste. If you have a microscope in the school, place a drop of milk on a slide and note the appearance of the fat globules.

Have pupils place a quantity of milk in a tall cylinder or graduate. Allow it to stand until the cream rises. Test the cream for fat and test the remainder for the presence of casein (protein), albumen (protein), sugar, and minerals by the following methods: (i) Place a drop of cream on paper and watch for a grease spot. (ii) Add vinegar or a rennet tablet to the part left after the cream is skimmed; stir and let it stand. Filter off curd. (iii) Heat some skim milk until a scum appears. (iv) Evaporate the water left from curd without burning. Taste for sugar. (v) Burn residue on mica.

Why should we drink milk?

What are the five common nutrients found in milk?

What is the approximate percentage of each?

What is the use of each to the body?

What are the two common vitamins found in milk?

Have pupils pour a small amount of raw milk in a beaker or dish at home or at school and leave it exposed to the air for a few days. Report the changes observed each day.

Why is it difficult to keep milk from spoiling?
How does temperature influence the keeping of milk?

Compare the keeping qualities of raw and pasteurized milk.
Working in pairs have pupils fill two test tubes approximately half full of raw milk. Place absorbent cotton in the mouth of one test tube; leave the other open.
Repeat the procedure using pasteurized milk. Leave all samples in the classroom for a few days. Compare the keeping qualities.

How can milk be pasteurized at your home or summer cottage?
Have a pupil place some water in the lower part of a double boiler and put some milk in the upper part. Maintain the heat so that the milk is held at 142° to 145°F for thirty minutes. Cool quickly to at least 50°F.
Have a second pupil maintain the heat so the milk is held at 161°F for 16 seconds. Cool quickly to 50°F.
Compare the keeping qualities of the two samples.
Why should milk be pasteurized? Refer to Pasteur and to pasteurization laws of Ontario.

What precautions should producers, distributors, and consumers take in the handling of milk?

Grade Nine

Part A

The Water We Drink

"Although primitive man knew little about the properties of water, he did know that without it life was impossible. A safe water supply is one of man's greatest achievements in the war against disease."

Review or teach the fact that water is a solvent, that rain is the source of all our drinking water, the water cycle in nature.

A study of impurities in water and their removal by some of the following treatments: aeration (Nature's method), coagulation, filtration, chlorination, boiling, distillation. Demonstrate as many of these as possible.

A study of the local water supply.

A brief study of how man is able to tap the supply of water underground by means of various types of wells. The water table.

A brief study of how surface water may be controlled and conserved for man's use.
Local conservation and flood control problems.
Water as a cleanser.
Hard and soft water, water-softness, the use of modern detergents.

The Air We Breathe

"We live in an ocean of air called the atmosphere. It is some hundreds of miles thick and it limits the movements of living things. Early man understood little about it because his only clues to its presence were the sounds and movements produced by wind. Later, the experiments of men like Galileo, Torricelli, Pascal, Mariotte, and Otto von Guericke revealed that air has weight, expands on heating, and exerts a great pressure. Today man takes advantage of many of the properties of air."

A simple experiment to show that air occupies space.
Place a two-hole stopper in a bottle or flask and insert a funnel or thistle-tube into one of the holes. Place a finger over the second hole and attempt to fill the bottle with water.
An experiment to show that air has weight.
Calculate the weight of the air in the classroom.
An experiment to show that air exerts pressure.
Develop the idea that air exerts pressure because it has weight. Demonstrate the use of the Madgeburg hemispheres or other related apparatus.
Remove air from a flat-sided can by boiling water in it.
An experiment to find out if pressure acts in all directions.
Recall the collapsed can. Remove the air from a funnel covered with a sheet of rubber, and hold the funnel in various directions. The rubber remains pushed in irrespective of the position.
The making of a simple mercurial barometer.
Variation from day to day and place to place.
Observation of the aneroid barometer.
Practice in making readings at different levels.
Discuss stratosphere flights.
A brief discussion of how we make air pressure do work.
Demonstration of the use of compressed air in caissons by inverting a large glass funnel under water and displacing the water in the funnel with compressed air.

Demonstration of the use of reduced air pressure in a fountain pen filler, a soda straw, a vacuum cleaner, and a rubber suction cup.

To explain the action of the straw, insert a one-hole stopper carrying a glass tube in a bottle filled with water.

Demonstration of preparation and test for oxygen (reactions and names of compounds not expected), presence of oxygen in air, use of the oxygen of the air for combustion.

An experiment to compare the combustion of sulphur and iron in air and oxygen.

The names of the oxides produced.

A brief discussion of the combustion of fuels as a chemical action producing heat energy, the dangerous properties of combustible gases such as gasoline vapour and illuminating gas.

An experiment comparing the rusting of damp iron in air and in oxygen showing that oxygen is used up by this method, that this experiment may be used to determine the approximate fraction by volume of oxygen in the air, that the remaining fraction, nitrogen, does not support combustion.

Recall test for carbon dioxide.

Experiment to show the solubility of carbon dioxide in water, the effect of this solution on litmus, the effect of other acids in litmus.

An experiment to show the action of a solution of carbon dioxide on a fine suspension of calcium carbonate (previously prepared).

The relationship of this to the weathering of limestone, the hardness of water in limestone regions, and the formation of scale in a kettle.

Home and industrial uses of carbon dioxide such as in baking, carbonated beverages, fire extinguishers, "dry ice".

Protection from corrosion caused by atmosphere, painting, galvanizing, plating.

Brief discusson of non-rusting and non-corrosive metals.

Heat

"Early man knew very little about heat. As man learned more about the sources of heat, its effects, and the methods by which it is transferred, he invented means of controlling it for his needs. The discovery that heat energy could be used to drive machinery revolutionized our manufacturing, transportation, and agricultural industries.

"Coal and petroleum still remain the chief sources of heat controllable by man. Since these materials are being used up at a very rapid rate, their conservation is a necessity.

"It is generally believed that all matter is made up of molecules which are in constant motion and that this molecular motion is a manifestation of heat. This is the kinetic theory of heat.

"Heat affects matter in various ways. It may cause a change in volume or state. It may cause a chemical change."

Simple experiments for each of the three forms of matter to show that heating generally causes expansion and that cooling results in contraction.

A simple explanation of thermal expansion in terms of molecular motion.

Question the pupils for illustrations and applications of the thermal expansion of matter.

An experiment to find out if metals expand equally through the same range of temperature.

The thermostat.

Experiments to find the fixed points on a thermometer scale by using melting ice or snow, boiling water.

Compare Fahrenheit and Centigrade scales by reading temperatures in both scales.

Mathematical conversions optional.

An experiment to illustrate the meaning of quantity of heat, the distinction between quantity of heat and temperature, the calorie, and the B.T.U.

An experiment to show that different substances have different heat capacities.

The importance of the high heat capacity of water in relation to climate.

Experiments to show absorption of heat without change in temperature when ice melts and when water boils.

The use of ice in refrigerating and of steam in heating.

An experiment to show change of temperature resulting from evaporation.

The principle of artificial refrigeration.

A brief explanation of evaporation in terms of molecular motion.

Experiments to show that heat is transferred through space by radiation, through solids by conduction, and through liquids and gases chiefly by convection.

The principle of heat transfer involved in any of the following: chimney, stove, furnace, ice-box. clothes, rock

wool insulation, snow, wooden handles on cooking utensils, copper bottoms on cooking utensils.

Question the class for the names of common forms of energy which may be transformed into heat—radiant, chemical, electrical, mechanical.

Demonstrations of these transformations.

Elementary Measurement

The International Standard Metre.

Measurement of length in metres, centimetres, and millimetres.

Comparison of the metre and the yard, the centimetre and the inch, the kilometre and the mile.

The measurement of the area of a rectangular yard in square centimetres, and the volume of a rectangular solid in cubic centimetres.

The measurement of the volume of a liquid in millilitres and in litres.

The International Kilogram.

The significance of the prefixes.

Proper use and care of the balance.

Measurement of the mass of a solid by use of the balance.

Meaning of density.

Experiment to find the density of a rectangular solid.

Experiment to find the density of water.

Experiment to find the density of mercury, or coal oil, or alcohol.

Comparison of densities.

Experiments to show flotation of a low density material upon a denser liquid, as oil on water, or potato on brine, or iron on mercury.

Principle of the hydrometer.

Demonstration to show that a weighted stick sinks to different depths in liquids of different densities.

The Weather

"The earth is heated unequally in different parts because it receives different amounts of radiant energy from the sun. As a result the atmosphere is continually undergoing slight changes which cause changes in the weather. Instruments have been invented to record these changes which are then used in weather prediction. Man cannot control the weather; he can only prepare himself for it."

Elicit from the pupils the fact that the weather both aids and hinders people's activities.

Discuss the effect of weather on sports, transportation, the clothing industry, taxicab business.

Recall the presence of water vapour in the air.

An experiment to determine dew-point.

Meaning of relative humidity. Measurement of relative humidity of the air in the classroom by means of wet-and-dry bulb hygrometer and of the hair hygrometer.

Recording of outdoor temperature, air pressure, wind direction, and humidity each day for a week or two. Record for the same period observations of the wind velocity, amount and kind of precipitation, and amount of sunshine.

Keep a record of weather forecasts.

Is there a noticeable relation between temperature, humidity, and air pressure in these observations?

Obtain a series of successive daily weather maps supplied free in class sets by Meteorological Division, Department of Transport, 315 Bloor Street West, Toronto, Ontario. Study the conditions of temperature, pressure, wind direction, wind velocity, humidity, precipitation, and sunshine around the "highs" and "lows".

Force, Work, Energy, and Power

"Civilization has progressed as man has learned to control and use energy. Today we live in an age of energy transformation."

Recognition that the weight of a body is a force and that pressure is due to weight.

Recall that the pressure of the atmosphere is due to its weight.

Consideration of other types of force such as muscular exertion, tension of cord, friction, elasticity of a spring.

Demonstration of the measurement of a force by the extension of a spring.

The weight or pull of the earth on a mass of one pound or one gram as a unit of force.

The spring balance.

The use of the units of weight for the measurement of non-gravitational force.

Experiment to show that water exerts a pressure.

Experiment to show that water pressure varies with depth.

Experiment to show that the water pressure is equal in all directions.

Demonstration of how water pressure may cause water to flow and drive machinery.

How water is lifted in nature.

The force of friction.

Simple experiments with the lever to show the relation between force and load.

The use of the lever to explain the meaning of work.

The foot-pound as a unit of work.

Simple problems.

Develop the idea that when a force is applied to overcome resistance, work is accomplished.

Give illustrations of work done when objects are moved, stretched, and lifted.

The meaning of energy. A simple discussion of the various common forms of energy.

Kinetic and potential energy.

Illustration of transformation of energy and the law of the conservation of energy.

Experiments to illustrate as many of these as possible.

The meaning of power.

The horsepower in foot-pounds per minute.

Simple problems.

Magnetic and Electrical Energy

"There is scarcely an activity in our lives which is not bound up in one way or another with electricity. Man has put it to work in a great many ways."

Experiments to show that some substances (magnetite, bar magnets) attract iron filings.

Magnets possess magnetic energy.

Experiments to show that magnetic lines of force surround a magnet and are concentrated at the poles.

Experiments to show magnetic attraction and repulsion.

Experiments to show the position of rest of a suspended or pivoted magnet to identify the poles.

Reference to the earth as a magnet.

Use of the magnetic compass as a direction-finder.

Experiments to show the electrification of ebonite rubbed with fur and of glass rubbed with silk.

Reference to the transformation of part of the kinetic energy used in this process into electrical potential energy.

An experiment to show electrical attraction, repulsion, and the two kinds of electrification.

An experiment to show electrical charges in motion, electric current, as indicated by sparks between the terminals of a static machine.

An experiment to show the production and detection of an electric current from a voltaic cell.

The dry cell as a special form of the voltaic cell.

Meaning of a circuit.

Have pupils set up a simple circuit using two dry cells, a 3-volt flashlight bulb, a switch, some ½-ampere fuse wire clipped into the line, and a gap to be filled with various materials being tested (copper wire, friction tape, a glass rod, a nail, some string, pencil lead, paper, ordinary paint, aluminium paint).

In this experiment show the purpose of the switch, that some substances transfer electrical energy and others do not, how exposed frayed wires can be brought together causing a short circuit.

Repeat experiment using No. 22 copper wire in place of the fuse wire.

Caution—Do not demonstrate short circuits using the 110-volt electrical outlets of the school.

Reference to the danger of short circuits and "grounds" in household circuits.

The use of fuses and switches.

A brief discussion of the transformation of electrical energy to heat energy by reference to the toaster, electric lamp.

An elemenatry discussion of electrical units—volt, ampere, watt, kilowatt-hour—in relation to common electrical appliances and in payment for electrical energy.

Simple problems.

Experiments to show the magnetic effect of an electric current in the deflection of a compass needle, in the electromagnet.

Part B

Scientists and the Scientific Method

A good way to teach this topic is to have a pupil read the biography of a famous scientist and to follow this with a class discussion of the implications for science of his work. Biography is an excellent means of illustrating the scientific method.

Biographies of men who made fundamental discoveries, invented instruments, and established the basic method of enquiry during the 17th century.

The testing of beliefs by observation, experimentation, and disciplined reasoning.

Francis Bacon, Galileo, Newton, Boyle, Leuwenhoeck, and others.

Biographies of any other scientists who made contributions in the fields studied this year.

Housing

"The application of scientific principles to building has resulted in great improvements in our homes."

Review the elements against which a house should afford protection.

A study of early and modern building materials.

Metals used in building indicating a useful property of each.

Insulating materials.

Points to be considered in planning a home.

Faults in modern buildings.

Sources of information for planning.

Heating systems.

Air conditioning.

Art in the home.

The Heavens

"The earth is only a small part of a vast universe. It is one of a number of planets rotating about an ordinary star. This star, the sun, is but one of billions of stars which make up the universe."

Instructions for the following observations should be given at the opening of school in September.

The sun.

Observations of the position of the sun at different times during a single day, at noon from week to week, at sunrise and sunset from week to week.

Observation of the variation in the length and direction of shadow during a single day, from week to week.

The moon.

Observation of the moon's position at different hours during a single evening, position and appearance at the same hour during successive evenings.

The stars and planets.

Observation of the position of the Great Dipper at different hours in the same evening, at the same hour in successive months.

Observations of the position of the Pole Star.

Recognition of the Milky Way.

Recognition of two planets and observation of the change in position of one of them.

Observation with field glasses of four of the moons of Jupiter.

The solar system.

Brief discussion of the sun, planets, moon, meteors, comets.

Explanation of day and night and the apparent movement of the sun by the diurnal rotation of the earth.

The earth.

The annual revolution of the earth and the inclination of the earth's axis to the plane of its orbit to explain the seasons, the variation in the length of day and night during the year, the different positions of the sun at dawn and sunset in the summer and winter.

The moon.

The rotation of the moon on its axis and the revolution of the moon about the earth to explain why the same side of the moon is always seen, why the moon appears later each day, the phases of the moon.

Shadows and eclipses.

Experiments to show that light travels in straight lines in air, the formation of shadows—umbra, penumbra.

Explanation of solar and lunar eclipses.

The stars.

Brief discussion of their nature, apparent movements, distances from the earth in light years.

Communications

"We make use of energy in communicating with others."

Improvements in methods of communications.

Reference to the uses of electricity in telegraph, telephone, radio, television.

The principle of the telegraph, of the telephone.

Soil Physics

Collection of samples of types of soils and their display in large glass jars.

Review or teaching of the topics outlined in the Grade VII course regarding origin of soils, classification by size of soil particles, water-holding capacity, the role of air in the soil, capillary action.

An experiment to show relation of soil moisture to soil temperature.

The effect of drainage upon the temperature of the soil.

An experiment to show relation of soil colour to soil temperature.

An experiment to show that a loose mulch conserves soil moisture.

Walk on the freshly prepared seed bed of a garden. Observe the imprint in a few hours and explain what has happened.

The meaning of sweet (alkaline) and sour (acid) soils.

The cause of acid in soil.

Name some crops which will not grow on acid soils and others which will tolerate some acidity.

The testing of soil for acidity by using brom thymol blue (Reactosoil Test), hydrochloric acid, litmus.

The correction of the acidity of soil.

The maintenance of soil fertility through replacing plant nutrients by ploughing under green crops (green manures), barnyard manures, commercial fertilizers, crop rotations.

Conservation of soils and soil moisture by cover crops, pasture and hay crops, methods of ploughing, planting windbreaks and shelter belts.

Gardening—The School and Home Garden

The school garden should represent a typical home garden and should receive the necessary care during the summer months. Most of the area should be devoted to growing fall maturing or perennial vegetables, small fruits, and flowers. A propagation area for growing new perennials from seed or cuttings should be included.

Discussion of the growing of early vegetables such as asparagus, rhubarb, tomatoes, onions, and potatoes.

Methods of propagating plants such as asparagus, currants, gooseberries, gladioli, cannas, peonies.

The compost pile—value and use.

The hot bed and cold frame—construction and use.

Floriculture

Landscaping.
  Formal and informal plans.
  Beautifying the home.
Lawns.
  Care of the old and the new lawn.
  Grading and drainage, soil, fertilizing, seeding, mowing, watering, controlling weeds.
Flower gardens.
  Flower borders—location, size, planting plan, materials, soil, annuals, and perennials.
  Culture of common flowers, including methods of propagating.
Trees, shrubs, and vines.
  Varieties suitable for home planting.
  Time of planting, fertilizing, use.
Rock gardens—site, stones, soil, plants.
House plants—potting, food, pests, watering and care.

Grade Ten

Part A

"The laws of life operate in us as they do in other living organisms. This is indeed fortunate for us, for it makes possible the application of much that is learned by a study of other living things to the solution of the problems of our own life. All living things are alike in that they use food, obtain energy from food, possess the power of growth, and are able to reproduce themselves."

General Structure and Functions of Plants and Animals

Review of the conditions affecting plant life (Grade VII).
Review of the conditions affecting animal life (Grade VIII).
Study of the general structure of a green plant—root, stem, leaves, flower, seed, fruit.
Study of the general functions of plant organs:
  root—anchorage, absorption and conduction of water and mineral salts;
  stem—support of leaves, flowers, fruit; production of buds; conduction of water and food;
  leaf—food making, respiration, transpiration;
  flower—see production.

Practical study of two living animals—insect, fish, bird, or frog—to review movements associated with breathing, feeding, locomotion, and adaptations of external features to environment and habits.

Brief consideration of the functional similarities in plants and animals.

The Cell—The Basic Structure of Living Things

"Living substance of all plants and animals under a microscope appears as protoplasm in cells. Man in his physical being has something in common with the plants in the field and the creatures in the stream."

Classification of various things into groups: plants and animals; things that are alive now, things that were alive once, and things that were never alive; organic and inorganic.

Microscopic observation of plant cell from an onion membrane, noting cell wall, cell body, cell nucleus.
The cell of spirogyra.

Microscopic demonstration of protoplasmic streaming in elodea, or "Canada Waterweed". Place the elodea in warm water on a warm slide, and, for best results, in the direct sunlight.

Microscopic observation of certain cells of the human body. Rub gently with a clean finger the mucous lining of the mouth, for cheek epithelium cells. Carefully transfer the cells onto some water containing a drop of iodine on a glass slide, and cover with a cover glass. Note the cell body and cell nucleus.

Microscopic study of micro-organisms found in a "hay infusion". Place a handful of grass which has started to decay in a 500cc beaker, add water, and boil the liquid for 10 to 15 minutes. Allow the mixture to cool and settle. Examine a drop of the liquid with high power of the compound microscope. Usually no organisms are found. Examine again with the microscope every 24 hours for about a week. Very careful lighting and focusing are required to see the micro-organisms.

Microscopic examination of the cellular structure of paramecium, spirogyra, or the amoeba.

Brief reports on Leuwenhoeck and the microscope, Hooke and the cork cell, Schleiden and Schwann and the cell theory.

The cell as a living unit—protoplasm as the physical basis of life, its need for food, oxygen, elimination of waste material.

Growth in living organisms attained by increase in size of cells, increase in the number of cells by division.

Grouping of cells to form tissues (bones, muscles, skin, plant epidermal tissue, pith), tissues to form organs (eyes, ears, hands, foot, roots, stems, flowers, fruit, seeds), organs to form systems (digestive), and systems to form organisms (plant, fish). Details of tissue structure are not required.

Brief review of the plants and animals studied previously as organisms.

Reference to the human organism.

How Plants Obtain Their Food

"The former belief that plants obtained all their foods from soil was abandoned when it was realized that potted plants could grow to a large size with little loss of soil weight. Since a plant can grow in soil which contains no carbon, and yet there are considerable amounts of carbon in the plants, it is possible that the needed carbon may have its origin in the air".

Experiments such as charring of wood to show the presence of considerable amounts of carbon in plants.

Experiments to show the formation of carbon dioxide by the combustion of charcoal, starch, and sugar.

Test for carbon dioxide.

Experiment to show the production of carbon dioxide from the action of an acid on a carbonate.

Experiment to show that a plant (elodea) dies if deprived of carbon dioxide.

Examination of a cross-section of a leaf (lilac) to show the arrangement of the cells, epidermis, stomata, chloroplasts, and chlorophyll.

Examination of leaf epidermis, including stomata.

Experiment to show the iodine test for starch.

Experiment to discover if starch is present in detached leaves which have been kept in darkness with the petioles in distilled water.

Experiment to discover if starch appears in leaves which have been kept in darkness and are then exposed to light. Elicit from the pupils a statement that the starch must have been produced either from raw materials including

carbon dioxide, or from substances such as sugar already in the leaves.

Experiment to show the connection between the presence of chlorophyll and that of starch. Use the leaf of coleus or variegated geranium.

The use of an aquatic green plant to show the exhalation of oxygen in bright light, the need for carbon dioxide in the process, e.g., by comparison of effect with boiled water, boiled water with carbon dioxide added.

The leaf as a good factory.

Photosynthesis.

Significance of photosynthesis for all living things.

Reference to sun worshippers among ancient and primitive tribes.

Energy of light transformed into potential chemical energy of carbon compounds.

Demonstration of the effect of light on certain chemicals.

Potential energy of foods, wood, peat, coal, petroleum.

Reference to solar machines.

Experiment to show the development of root hairs in germinating seeds.

Demonstration of diffusion of a gas in air and of a dissolved salt in water.

Simple experiment illustrating the absorption of water with salts in solution through membranes and the significance of this in absorption by roots.

Recall experiment to show the presence of mineral salts in solution in soil water.

Reference to fertilizers as source of minerals deficient in the soil.

Demonstration of the rise of water in stems.

Examination of a cross-section of oak or other tree trunk to discover pith, heart-wood, sap-wood, rays, cambium, outer and inner bark.

Fungi and Bacteria

"Some species of fungi and bacteria are useful to man; others interfere with his welfare."

Culture of bread mould and microscopic examination of the mycelium, sporangium, and spores.

The mushroom as a plant—vegetative and reproductive parts, mode of life.

Comparison of the mushroom with a green plant studied previously.

Recognition of the common meadow mushroom and of the poisonous amanita.

Culture of yeast in sugar solution and collection and identification of carbon dioxide.

Microscopic examination of yeast cells.

Economic importance.

Laboratory demonstration by the use of Petri dishes and agar to show development of colonies of bacteria. Use a pressure cooker to sterilize the dishes and agar.

Discussion of how bacteria assist in maintaining the balance of plant and animal life.

Nitrogen fixing and legume bacteria.

Reference to the role of bacteria in cheese, sauerkraut, vinegar, and the septic tank.

Discussion of diseases such as typhoid fever, ring rot in potatoes caused by bacteria in animals and plants.

Study of the mode of life of a fungus such as apple scab, loose smut of oats.

Economic importance of smuts, rusts, mildews, and blights.

Discussion of methods of combatting injurious micro-organisms by pasteurization of milk, sterilization of canned goods, new drugs, quarantines, vaccinations, keeping the human body in good condition through good food, sunlight, exercise, rest, cheerfulness.

References to Alexander Fleming, Robert Koch, Louis Pasteur.

Foods and Nutrition

"Food supplies all living things with the materials of growth and the ability to do work".

Elicit by discussion a statement of the need for food by plants and animals.

Discussion of the fact that an organism uses energy to do its work.

Experiment to show that the temperature of germinating seeds is higher than that of seeds not germinating. A thermos bottle may be used to hold the heat of the germinating seeds. Close the mouth of the bottle with cotton to allow some oxygen to enter and take the temperature at regular intervals.

Recall that an organism needs new protoplasm to provide for growth and to replace protoplasm that has been used up.

Elicit by discussion the names of the common nutrients in food—water, starch, carbohydrates, proteins, minerals.

Experiments to show that plant and animal tissues contain water, the percentage of water in such foods as fresh vegetables, fresh fruit, cereals, or butter.

Study of carbohydrates.

Recall test for starch.

Experiment to determine the presence of starch in such foods as flour, potato.

Experiment to show a test for sugar, using Fehling's solution or Benedict's solution.

Experiment to produce carbon and water from starch.

Meaning of carbohyrates.

Foods rich in carbohydrates.

Study of fats.

Experiments to show that fats are insoluble in water, are soluble in carbon tetrachloride, produce a persistent greasy translucent spot on paper.

Foods rich in fats.

Study of proteins.

A test for proteins, using nitric acid.

Foods rich in proteins.

Needed elements found in proteins not present in other nutrients.

Study of minerals.

Experiment to show the presence of ash or mineral matter in such foods as rolled oats and potato, by gently burning to complete combustion.

The testing of foods to show that foods generally contain several nutrients.

Testing of a few plant roots and stems for nutrients.

Reference to the storage of foods by plants living more than one year. Use of this food in the spring.

In teaching the next topic the right approach is all-important. The "must" appeal has little effect. Boys respond to the relation between health and proficiency in athletics. Girls are interested in personal appearance. Studies of food use by children reveal three major difficulties —- lack of interest, lack of knowledge, lack of money. The most frequent factor and the one most difficult to combat is a lack of interest.

Study of a balanced diet.

Discussion of the role of carbohydrates, proteins, fats, mineral salts, and water in the diet.

Emphasis on the fact that proteins supply energy and tissue-building material; carbohydrates and fats provide energy only.

Discussion of vitamins.

Emphasize the fact that a varied and balanced diet will provide all the necessary vitamins.

The formation of vitamin D in the body.

The protective foods.

Reading of bulletins on nutrition available from the Ontario Inter-Departmental Nutrition Committee, 150 College Street, Toronto 5.

Experiment to show the production of heat by the burning of sugar or starch.

Discussion of food as fuel and of the calorie equivalent of some common foods.

Review of the role of food in supplying energy for heat and work.

Comparison of the quantities of food required by warm-blooded and cold-blooded animals, active and inactive animals, growing and mature people, sedentary and very active people.

Recall photosynthesis, stressing the absorption of energy in a reaction which is the reverse of the oxidation of carbon-containing substances.

Discussion of the carbon cycle.

Study of food-chains among plants and animals such as owl-mouse-grass, wolf-deer-foliage.

Discussion of how man has frequently upset the natural balance of life.

How may it be restored?

Naming of three animals and three plants that have invaded Canada and have increased out of balance.

Digestion and Circulation

"'Corpora non augunt nisi soluta' (Substances act only when dissolved) is one of the oldest principles in physiology. Most foods must be changed by digestion to make them soluble so that they can be carried to the cells by the blood. Water plays an essential part in plants and animals. The science of life has been called a water science."

Review or teaching of the relative solubility in water of such solid substances as cane sugar, bluestone, chalk, and starch.

Review experiments to show that substances which dissolve tend to intermingle with the liquid in which they dissolve.
Brief reference to the kinetic molecular theory to explain diffusion.

Review experiments to show that in the process of intermingling dissolved substances may even pass through certain types of membranes.

Experiment with starch solution to show that substances which are not dissolved cannot pass through certain types of membranes.

The meaning of digestion.
The changing of insoluble nutrients into soluble forms to get past the animal membranes.

Review or teaching of the conversion of starch into sugar by the action of saliva.

Study of a chart to show that the digestive system of man contains digestive glands and special organs for making digestion easy.

Brief discussion of the effects of the secretions of the salivary glands, stomach, small intestine, pancreas, and liver, omitting names of the enzymes.
The breaking down of fats and proteins.
The changing of all carbohydrates into sugars.

Passing of digested food into the living cells of the plant and animal body.

Study of a simple diagram of human blood circulation. Names of blood vessels not required.

Demonstration with a microscope of capillary circulation in a tadpole's tail, in the web of a frog's foot, or in a fish's tail to show that blood moves and that capillaries are slender blood vessels with walls one cell thick.
Place the living tadpole in a hollow ground slide. Fasten the frog on a chalk-box lid with tape, and stretch the web of the foot over a hole in the lid to facilitate the transmission of light.

Discussion of the exchange of materials between tissue cells and blood through the thin walls of the capillaries.
Meaning of assimilation.

Discussion of the elimination of waste materials by the lungs and kidneys.
Perspiration.

Reference to the burning of coal and to its waste products.

"Air is a mixture of gases, each of which contributes to man's welfare. It is essential to living things. Our knowledge of the composition of air has led to a better understanding of the nature of burning and breathing."

Review of the preparation and testing of oxygen.

Experiment to show the proportion of oxygen in air by volume.

Brief review of the combustion of fuels, the principle that fire goes out when fuels are kept from contact with air, fire extinguishers, the idea that many things burn in air because of the oxygen it contains.

Experiments to show that most plants need air in order to live.

Discussion of the need for oxygen by most living organisms.

Experiment to show that carbon dioxide is present in exhaled air to a greater extent than in atmospheric air.

Observation of the action of fish in air-free (boiled) water. Show that the fish give off carbon dioxide by immersing a fish in a shallow jar of limewater.

In both experiments be prepared to give the fish first-aid by having some fresh water ready.

Experiment to show that carbon dioxide is liberated when seeds germinate.

Review of the production of heat by seeds germinating.

Demonstration of the release of carbon dioxide from a green plant kept in darkness. Point out the use of energy by plants to do work.

Review of stomata and of their function in respiration.

Demonstration of the presence of carbon in organic material.

Discussion of its source.

Brief study of the breathing organs of the earthworm (skin), an insect (spiracles), the cold blooded vertebrates of fish (gills), amphibians (gills and lungs), reptiles (lungs), the warm blooded vertebrates of birds (lungs), the mammals (lungs).

Study of how gases are taken into and expelled from the lungs.

Study of the role of the circulatory system in respiration. Observation under the microscope of a drop of blood diluted with saline solution (0.9% common salt) to note the red blood cells.

Questioning of the pupils to reveal that the oxygen we breathe is used to oxidize certain materials in our bodies.
Discussion of the role of haemoglobin in the red blood cells.
Review of the fact that substance derived from food combines slowly with oxygen in the living cells and that energy is released.
The excretion of carbon dioxide from the body.
Carbon monoxide poisoning and artificial respiration.
Interrelations of respiration, circulation, digestion, and excretion in animals.
Interrelations of respiration, conduction, photosynthesis, absorption, transpiration, storage, and digestion in plants.

Reproduction in Plants and Animals

"All life as far as we know comes from preceding life and tends to reproduce its own kind. Plants and animals must have offspring to take the place of those that die. This formation of new individuals is called reproduction."

Review of the microscopic examination of yeast cells in various stages of division.
Demonstration of how some plants reproduce by developing portions of themselves into new individuals.
Start with stem cuttings of willow or geranium, root portions of carrots or parsnips, a leaf of an African Violet, a leaf portion of sedum, and bulbs of an onion or narcissus.
Brief review of the reproduction of fungi from spores.
Elicit by discussion that many plants reproduce by developing flowers.
Review of the structure of a flower, especially the essential organs, stamen and pistil, and the functions of each.
Review of the production of pollen cells and tiny egg cells.
Study of the development of a seed by the union of the nucleus of the pollen cell (male) with the nucleus of the egg cell (female) as an example of sexual reproduction.
Reference to Luther Burbank and Charles Saunders in plant-breeding.
Demonstration to show the developing ovary and young fruit in such flowers as sweet-pea, cherry, at various stages of their development.
Examination of seeds in different kinds of fruit to show that the seed develops from the ovule after fertilization

and contains both the embryo and stored food which the new organism can use before supporting itself.

Examination of such seeds as beans and peanuts to show the embryo and the stored food enclosed in a protective skin. Omit technical terms.

Study of reproduction in fish or frog.

To show the development of the frog put some frogs' eggs into wide shallow container with plenty of green plants. Use original pond water and remove the infertile and white eggs. Do not expect frogs to develop beyond the early tadpole stage.

Study of the life history of a common insect, e.g., mosquito or tent-caterpillar.

Raise a generation of mosquitoes in a large jar to illustrate reproduction in insects. Use pond water containing mosquitoes at various stages of development.

Study of a fertilized hen's egg to learn that the bird's egg contains the fertilized egg cell and the stored food.

The class should be able to realize that fertilization of this egg must take place prior to the laying of the egg and that the fertilized egg must be kept warm for a time so that the young bird may develop. In some schools it will be possible to hatch some eggs in an incubator. Reference to similar process in mammals.

Discussion of how young organisms are protected and cared for in nature.

Discussion of the provision made by man for the protection and care of his young.

Include increased health protection, provision for more education, and greater development of a proper social attitude.

Part B

Plants and Their Habits

Observation of the flowering plants common to lawns, cultivated fields, grasslands, dry roadsides, moist roadsides, dry rocks, woodlands, land along water courses.

Observation of the species of trees common to swamps, rock country, wet sand, dry sand, land along water courses.

Birds and Their Habits

Identification of birds common to marshlands, meadows, orchards, evergreen bush, hardwood bush, rivers and lakes.

Similar observation of other animals.

Adaptation to mode of life.

Family life.

Conservation of Human Resources

"Each time a growing child or a strong adult dies needlessly, part of Canada's greatest resource is wasted."

Discussion of Canada's people as her greatest asset.

Investigation of the number of accidents in Canada each year.

Elicit from the pupils steps taken to avert this waste—the scientific development of safer automobiles, safer highways, safer homes, safer factories, safer schools, preventive medicine.

Safety Related to Foods and Drugs

"Poisoning in the home through foods, medicines, disinfectants, insecticides, and cleaning compounds must be regarded as an everyday danger."

Discussion of the dangers of eating wild mushrooms, unwashed fruits.

Try to obtain a can of food with bulging ends. Discuss botulism.

Discussion of the presence of trichina and tapeworm in some meats.

Showing of prepared slides or preserved specimens of the above.

Exhibition of common household chemicals which are poisonous—lye, D.D.T. solution, sodium fluoride, bleaching solutions, matches, tincture of iodine.

Class discussion of proper labelling and storing of dangerous chemicals.

Demonstration of the action of an antidote.

Insects

"Over one half of the species of animals in the world are insects."

A survey of three or four insects injurious to plants and animals such as aphids, codling moth, white grub, European corn-borer, warble fly.

Nature and extent of injury, control measures.
Economic importance of insects.

Study of the honey bee as an example of a social insect and as one of the insects most useful to man.
Structure of the hive, life in the colony, the duties of the queen, worker, and drone.
Brief study of the life history and anatomy of the bee, giving attention to the structures and modifications of organs that adapt the bee to its manner of living and differentiate it from other insects.
The bee as a pollinating agency.

Milk on the Farm

Teaching or review of the topics on milk in the Grade VIII course.

Production of clean milk on the farm—cows, stables, milkers, utensils, cooling.

Electricity in the dairy stable.

Micro-organisms in milk, undesirable fermentations.

Babcock test for butterfat.
Testing of one or more samples of milk.
Principles of the test with reference to the action of sulphuric acid and centrifugal force.
Composite samples.

Brief discussion of milk products.

Incubation of the Chick

Selection of hatching eggs, setting the incubator, daily operation, observation of the developing embryo after one, two, three, four and six days incubation.
Observe the rapid development of the brain, beating of the heart, growth of other parts of the body.
Brooding of chicks, operation of the brooder, feeding and care of the chicks.

Review the grades of eggs.

School Gardening

Activities of interest to the pupils and to the community.
Participation of pupils in beautifying the school grounds.
Propagation of annuals, perennials, and shrubs in the school garden and in the hot bed for school and home planting.

Planning and planting the home grounds.
Formal and informal landscape plans, brief study of garden insects, weed control, reforestation plot, the forestry club.
Care of the new and of the established lawn.

Home Projects in Agriculture

Each pupil should complete at least one project before completing the work of Grade X. The teacher should encourage selection of projects suited to the experience and ability of the pupil. Boys and girls from farm homes should select projects related to growing of crops and other farm activities. All projects should be supervised by the teacher, and visits should be made during the summer to check on the progress of the project. A suitable report should be required of all pupils. For pupils who do not live on farms and who have no garden areas at home it may be possible to arrange a school project.

The following is a suggested list of projects.
Management of one or more colonies of bees.
Incubation and rearing of chicks.
Management of a flock of laying hens.
Improvement of the home grounds.
Growing some farm crop.
Raising livestock.
Membership and activity in a livestock, poultry, grain, garden, or forestry club.
Conduct experiments on farm crops using commercial fertilizers.
Give a detailed report on the processing of some farm crop or commodity being carried on in your community.
Make a survey showing the financial investment on a 150-acre farm.
Reforest an area or plant windbreaks.
Conduct experiments with commercial weed killers on your lawn.
Start a farm workshop.
Remodel your poultry house, keeping in mind modern methods of housing the laying flock.
Construct and operate a hot bed and a cold frame.
Grow registered or certified seed.

FRENCH

Grades Seven and Eight

In accordance with the established practice, a board may, with the approval of the Minister, introduce the study of French in Grade VII or in Grade VIII. It is recommended, however, that French be taught in these grades only if teachers competent in oral French are available. Courses should be mainly oral and conversational, and carefully coordinated with those of Grades IX and X. Grammatical points should be introduced orally and in conversation and should not be summarized until the oral work has made the pupils familiar with them. Some written work and some reading should be done. At the beginning, the reading should be blackboard reading, proceeding from the reading of single words to short phrases and then to longer sentences which have been used frequently in the oral work. The provision of short daily periods will increase the effectiveness of the course.

Grades Nine and Ten

It is considered unnecessary to suggest outlines of courses in French for Grades IX and X, as sound guides are provided by the text-books presently authorized.

In communities, however, where both English and French are spoken and particularly in communities where oral French is taken in Grade VII or Grade VIII, it is recommended that Curriculum Committees consider the advisability of making the courses in Grades IX and X chiefly oral and conversational, leaving the more intensive study of grammar and reading to be taken in the Senior Division.

LATIN

Aims

1. To enable the pupil to read with enjoyment simple Latin prose and poetry.
2. To appreciate the contribution of Roman life and thought to modern civilization.
3. To help the pupil practise accuracy in thinking and precision in the use of words by expressing similar ideas in both Latin and English.
4. To appreciate the contribution of Latin grammar and vocabulary to the English language and of Latin literature and mythology to English literature.

Organization of the programme

With the inclusion of Latin among the optional subjects in Grade IX, first courses in Latin may be offered both in Grade IX and in Grade X. Most schools probably will prefer to begin the subject in Grade X. It is also probable that Latin may be offered as an option in Grade IX by some smaller schools, which do not provide Shop Work, Home Economics, or Commercial Work, and by some larger schools, where a sufficient number of pupils wish to begin the subject in that grade.

In these schools it will be desirable to draw up a course of four years' duration from Grades IX-XII which will not be merely a breaking up of the present course from Grades X-XII into four sections instead of three. In such a course it is suggested that the work in Grade IX place particular stress on word study and include relatively less vocabulary and grammar than the present Grade X course. The work in Grade X might be of a similar nature and be designed to care for the needs of pupils intending to enter the Senior Division and of those intending to leave school at the end of Grade X.

The larger schools which offer a four year course in Latin commencing in Grade IX may choose to offer in addition

a three year course commencing in Grade X. These schools will find it advisable to provide separate courses until the commencement of Grade XII for the pupils who begin the subject in different grades. Such an arrangement, while it may be difficult to achieve in some cases, possesses several advantages. Pupils who begin Latin in Grade IX will receive the benefits of longer experience with the subject and will be more likely to gain an interest in continuing their study in the Senior Division; and pupils who decide at the end of Grade IX that they wish to begin the study of Latin will not be prevented from doing so.

Word Study

Word study is one of the most important parts of the work in Latin, particularly in Grade IX. The pupil should be led to recognize its importance and to assume as much responsibility as possible in using the dictionary and in keeping careful notes.

Word study, if properly handled by the teacher and based on the vocabularies in the class text, will be an integral and effective part of every lesson. Merely to point out one or two derivatives from each Latin word in a vocabulary—e.g., to say that insulate comes from insula—and then to pass on without further comment is pointless. A thorough procedure would develop the following information: (i) definition of the word (ii) relation to paeninsula (iii) development of the meanings of insulate, insulation, insulator, and the use of these words in sentences (iv) reference to insulin (from the islets of Langerhans in the pancreas of animals) (v) relation to isolate, isolation (from the French isole and the Italian isolato and not to be confused with derivatives from the Greek isos, equal) (vi) reference to isolationist.

Grade Nine

Vocabulary
- approximately 150 words

Grammar
- declensions
  - nouns of the first, second, and third declensions, omitting third declension i-stems
  - adjectives of the first and second declensions, including types in -er

conjugations
the four regular conjugations, including third conjugation verbs in -io
the indicative active
present, imperfect, future tenses
sum in the above tenses
the present imperative
constructions
indirect object
ablative of means
temporal clauses
questions with -ne
prepositional phrases with cum, in, ad, ex, ab

Word Study
based on words in the pupils' active and reading vocabulary in Latin and English
etymology in the English dictionary
definitions
derivatives
in science, mathematics, French
in passages of English literature
in mottoes, inscriptions on coins, cornerstones
independent practice
finding derivatives
using derivatives already learned
distinguishing similar derivatives from different roots
prefixes, suffixes
building up groups of words

Reading continuous passages of Latin literature

Roman life and society

ART

Aims

1. To raise the standard of aesthetic taste.
2. To assist the pupil to develop his capacities to meet his needs.
3. To assist the pupils to become a useful and cooperative member of his social group.

Nature of the Art Programme

Art includes the use of the emotions and the intellect. In producing art forms the pupil is required to present his emotional and intellectual reactions to experiences in his life. Art is, therefore, a personal expression and depends upon the pupil himself. Since art is the expression of the pupil's reaction to life, it leaves no room for copying nor for the undue intrusion of adult thought. It must be remembered that the end product of this art programme is not the production of art objects, but rather the development of the properly educated pupil both as an individual and as a member of his social group.

Design

Design is not a separate division of the art programme. Pupils develop a feeling for design through practice, and not by the memorization of rules nor the execution of prolonged exercises. However, pupils should have controlled experience with elements of design, including: line, mass, space, light, shade, colour, texture. The control of this experience is one of the functions of the teacher of Art.

The study of these elements will be derived from the activities currently engaging the pupils. They will learn concepts of unity, variety, centre of interest, balance, rhythm, volume, shape related to function, and suitability of materials. Non-objective art is important in focusing attention upon design.

History of Art and Picture Observation

A formal isolated study of the history of art and of famous masterpieces is not required in these grades. Outstanding examples of work by professional artists both traditional and contemporary must not be ignored, however. Excellent material may easily be obtained from the National Gallery of Canada, Ottawa, the Art Gallery of Toronto, and from many current magazines, including 'Canadian Art'.

Professional work should be observed in conjunction with the art activities engaging the pupil at the moment. For example, should the pupil be dealing with social themes, his attention might be drawn to an artist such as Daumier. Should he be dealing with line, he might observe some of the drawings of draughtsmen such as Picasso. Should he be confronted with problems of pattern, he might be directed to the works of such painters as Tom Thomson or Emily Carr.

It must be kept in mind that pictures collected and observed will never be used for purposes of copying, but that they will act as a constant inspiration for creative endeavour.

Evaluation for Pupils' Reports

Evaluation of progress should be based upon the ideas and emotions expressed by the pupil rather than upon neatness and technical quality.

The pupil who appears to be doing his best according to his level of maturity in the various aspects of his art programme should be considered satisfactory.

Formal examinations in art are not recommended, but a simple system of grading may be employed. Experimental work designed to develop a system of grading is being carried on at the present time.

Organization of the Art Programme

The Intermediate Art Programme is divided into two sections:

I. Picture-making
II. Optional activities

Picture-making will be taught each year and should be allotted approximately one-half of the prescribed time for art during the academic year.

Optional activities are sixteen in number. From these, three or four activities should be selected each school year. Care should be taken to vary the optional activities from year to year.

I. Picture-Making Programme

Recording Life Around Us

Community, home, school, and play.

Still Life (to receive more emphasis in higher grades)

Children must be permitted to make their own arrangements of objects and then use their imagination to alter the arrangements on paper in order to create a more significant composition. However, some children with scientific minds will insist upon drawing with exactness, and this they should be permitted to do. If nature specimens are utilized in still life studies, the same freedom of expression should be allowed.

Life Drawing (all grades)

Life drawing should be related to other art activities. Life drawing should be taught so that the pupil may gain self-confidence in his general picture-making.

The pupil should have freedom to re-arrange the drawing of posed figures to produce more significant design.

Both deliberate drawing from posed models and quick sketches of moving models should be made.

Non-Objective

The nature of non-objective painting should be thoroughly discussed.

The work of professional non-objective painters should be studied.

Non-objective painting should be included in the programme for those pupils who show special aptitude for it.

Materials for Picture-Making

Media

tempera paint
charcoal
chalk
india ink
oil paint (expensive but effective)

Brushes
- hog bristle (few)
- sable (many), #6

Papers
- off-white papers preferred with most media in most cases
- minimum size 12″ x 18″

Types of paper
- bogus
- sugar
- construction
- cream manilla
- wrapping
- newsprint
- craft
- cartridge

Special Techniques in Picture-Making

Montage using textured materials
- Mixed media, for example:
  - wax crayon with india ink and thinned tempera paint
  - montage and drawing media

II. Optional Activities

Linoleum Cutting
- The making of pictures, greeting cards, book plates, tickets, menu covers.
- The use of linoleum cuts for textile printing.
- Single or multiple blocks.

Weaving
- Weaving of scarves, belts, drapes, rugs, and other textiles.
- A study should be made of good hand weaving and of manufactured textiles.

Whittling and Carving
- Carving of non-objective forms, abstract carving in low relief, and natural forms with due regard for the medium.
- Some study should be made of Canadian wood-carving, including that of the West Coast Indians and of the French Canadians.
- Local woods such as cedar fence rails should be used if suitable.

Marionette and Puppet Making

Production of plays and stage settings with themes based upon original scripts or upon especially selected themes.

Production of plays will include the making of puppets or marionettes, costume designing, the building of the stage, arrangement of lighting, decor, stage management, manipulation of characters, and selection of suitable background music.

Paper Sculpture

Manipulation of paper into non-objective and abstract forms in two or three dimensions.

Making of masks, heads, figures, and settings.

Leather Work

Making of book marks, key cases, bill folds, purses.

Studying Design in Daily Life

A careful study of items of design in daily living, including: automobiles, aeroplanes, furniture and its arrangement, clothing, electrical fixtures, kitchen utensils, pottery and china, show windows, public buildings, advertising, magazines, books, contemporary home architecture.

Some attempt should be made by the pupils to design some practical objects with a view to their function and the material employed.

Silk Screen Printing

The printing of drapes, tablecloths, textiles for dresses, skirts, and blouses.

Using one or more colours.

Poster Making

Making of posters when the need arises.

Study of lettering styles and lay-out.

The use of cut paper in poster making and special techniques, including lettering with lettering pens, felt brushes, spatter work, or air brush.

Stage Craft

Designing of settings, costumes.

Study of lighting and make-up.

Production of a play.

Model Building

Making model houses, churches, schools, and other buildings which may later be grouped to form model communities.

Designing of room interiors and stage settings.

A study of good architectural forms.

Stencilling on Paper and Textiles

Making of book covers, tablecloths, textiles for dresses, skirts, and blouses.

Some patterns may be improved by free brush work after stencilling.

Book Making

Making of booklets, pamphlets, albums.

Designing covers, re-binding old books.

Work in Ceramics

The modelling of free forms, bowls, dishes, forms based upon living figures.

Firing and glazing.

A study should be made of good ceramic work.

Advanced Drawing

Drawing from the living model, still life, and landscape. Media will include conté crayon, charcoal, pencil, fountain pen and ink, chalks, india ink, and mixed media. The work done is to meet the need of those who require additional skill in drawing. The photographic representation of objects is not necessarily required.

Metal Work

Making of low relief plaques from thin metal, costume jewellery, bowls, trays, and book-ends.

General Equipment

1. Drawing boards—18″ x 24″, poplar or cedar plywood, ½″, ⅝″, or ¾″ thick, or 1″ solid pine or basswood.
2. T-squares—about a dozen for lettering and poster work.
3. Adequate storage space.
4. Display boards for classrooms and halls made from building board, plywood, or cork.

5. Water supply. Where running water is provided a sink is desirable.

6. Table space. Flat top tables large enough to seat six pupils, or individual art tables with adjustable tops are desirable.

   Where art classes are conducted in standard classrooms with fixed desks, working surfaces for large sheets of paper may be obtained by the use of:

   tables placed at the back of the room,

   bulletin boards,

   blackboards by taping paper directly to the surface,

   tables hinged to walls below blackboards.

7. Work-bench with vise and carpenter's tools.

8. Muffin tins for mixing tempera paint—6 or 8 compartments to a tin.

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MUSIC

Aims

1. To help pupils acquire a wide interest in music.
2. To help pupils acquire a higher standard of appreciation of music.
3. To help pupils improve their skill in performance.
4. To discover and encourage musical talent.

Purpose of the Revision

The outlines of the courses are intended to accomplish the following purposes:

1. To provide a minimum course suitable for all pupils;
2. To give time and opportunity for teachers to develop a course suited to the capacities and special interests of their pupils;
3. To give teachers wide opportunities for choice in activities, music to be studied, and depth of treatment;
4. To stress learning how to play musical instruments in Grades IX and X, and to stress the more advanced study of music in GradesXI, XII, and XIII.

Outline of the Courses

I. Class Listening

Grade VII and Grade VIII	The recommended course is outlined in the Department of Education circular, *Music Appreciation for Schools, Grades I to VIII.* The RCA-Victor School Music Albums contain suitable recordings and teaching suggestions.
Grade IX and Grade X	It is recommended that the present courses be followed, but that some material in each be taken in the succeeding grade.

Vocal Music

1. Class singing of
   (a) unison songs for enjoyment, the study of song literature, seasons and special occasions, correlation with other subjects;
   (b) part songs to develop harmony singing within the range of the pupils' voices.

   (No change in the present singing programme for Grade VII is recommended.)

   Song books recommended for Grade VII:
   High Road of Song, Books 1 and 2 (Gage)
   Singing Period, Book 5 (Waterloo)
   Silver Book of Songs (Thompson)
   Canadian Singer, Book 6 (Gage)
   School and Community Song Book (Gage)
   New Music Horizons, Book 6 (Gage)
   Song Books for Ontario Schools (Clarke, Irwin)
   Canadian Song Book (Dent)
   Sing Care Away (Novello)
   Hymns for Schools (Thompson)
   Songs of the Commonwealth (Thompson)
   Carols of Christmas (Thompson)
   Christmas Carols, arranged Hill (Waterloo)

2. Class sight reading

   Grade VII Six part measure, dotted beat note. minor scales, simple modulation.
   Texts: *High Road to Sight Singing,* Book 2, pages 31-59.
   High Road Teacher's Manual
   (No change in the present course is recommended.)

   Grade VIII Review of elementary sight singing, including bass staff.
   Text: *The Chorister,* Book I, Chapters 1-6

   Grade IX Half note and eighth note beat values, eighth note and rest, dotted quarter note.
   Text: *The Chorister,* Book I, Chapters 7-10

Grade X Sharps, flats, naturals, modulation to dominant and sub-dominant.
Text: *The Chorister,* Book I, Chapters 11-14

In schools where only one course can be offered in Grades IX and X, part of the Grade X course in Sight Reading may be taken in Grade IX, and any essential material omitted may be taken in Grade XI.

Instrumental Music

An experimental course in Instrumental Music for Grades VII to X is being tried out in a number of selected schools. A copy of the course may be obtained from the Assistant Director of Music, Department of Education.

BUSINESS PRACTICE

Aims

1. To acquaint the pupil with the fundamental knowledge and practices useful in everyday business transactions.
2. To train the pupil to solve simple business problems by organizing his information and presenting his solution in usable and attractive form.
3. To develop appreciation of the need for dependability, courtesy, thoroughness, and desirable standards of service in business relationships.
4. To help the pupil acquire the basic skills which will lay a foundation for further business studies and promote effective work habits in other subjects.
5. To provide the pupil with the opportunity of assessing his own aptitudes, interests, and skills in relation to the requirements for success in business occupations.

Organization of Material

The materials used in realizing the aims of the course may be divided into two main classes:

1 General Information

The teacher may use this type of material to encourage pupil participation in the selection of topics to be covered, in gathering and organizing the necessary information, and in preparing and presenting reports to the class. These activities will provide opportunity for training in group work, use of references, writing of individual or cooperative reports, oral presentation, and discussion in class.

2 Records of Business Transactions

The use of this type of material will contribute to the development of desirable skills. The completion of business forms and the recording of business transactions will also provide practice in legible writing, neat ruling, and approved methods of calculation.

Grade Nine or Ten

Topic 1 Business in our community

A short survey of the kinds of business in the community—retail, wholesale, manufacturing, banking, shipping, transportation, utilities, professional services—and the contribution made by each.

This study gives wide scope for individual and collective work, utilizing local sources of information. In the larger centres of population it should be limited to specified areas.

Topic 2 The flow of money

A short study of the kind of expenditures made in the home, in various school activities, and in the community. While no attempt should be made to set up budgets, the development of this topic will lead naturally to the sources of income, and to the need for adequate records of cash receipts and payments.

Topic 3 Recording receipts and payments

The development of the simple cash book, with exercises on ruling, proving, and balancing. The need for receipts and vouchers.

Learning to calculate weekly profits, and to prepare a simple profit and loss statement.

Topic 4 Safeguarding the cash

The procedure involved in opening a bank account for personal use, making deposits and withdrawals, issuing cheques, and endorsing and depositing cheques.

Topic 5 Duties of a Treasurer

The powers and duties of a treasurer.

How to open a current account, make a deposit, including the deposit of cheques with exchange charges, and the issue of cheques. The necessity for verifying charges and obtaining vouchers.

The preparation of a two-page cash book with cash and bank columns. Reconciliation with the bank statement.

Preparation of financial reports.

Topic 6 Planning personal finance

A brief study of personal budgets.

Methods of purchasing—cash purchases, basis of personal credit, charge account, deposit account, bank loans, promissory notes, and collateral.

Buying on the instalment plan, borrowing with monthly payments.

The purchase of a car—responsibilitiy of ownership, costs, how to finance, kinds of insurance.

Investing savings—bank accounts, bonds, stocks, annuities, brief treatment of types of insurance.

Safeguarding business documents.

Topic 7 Planning a trip

A study of the different methods of travel.

The planning of individual itineraries—arrangements for reservations, credit, and passports for foreign travel.

A summary of the comparative advantages of the different types of trips studied.

Topic 8 Planning our home

The responsibilities of the householder to the community in which he lives.

Renting a house or apartment—obligations of landlord and tenant, the lease.

Planning for home ownership—saving for a down payment, purchasing a home already built, the mortgage, building one's own home.

Costs of maintaining a home—types of insurance, taxes, heating, public utilities. In this section, actual examples of assessment notices, tax bills, water, gas, electricity, and telephone accounts should be used.

Topic 9 The business of the retailer

How the retailer serves as a link between the producer and the consumer, services offered to the consumer.

Various types of retail establishments, a review of the preliminary study made at the start of the course.

Cash sales and how they are recorded—cash register slip, counter slip, C. O. D. payment.

Credit sales—establishing a charge account, sales slips, the ledger, posting sales and payments to the ledger, statement of account.

Purchasing goods and checking shipments — requisition, purchase order packing slip, invoice, checking invoice, purchase journal, posting to the creditors' ledger.

Maintaining an inventory—physical inventory, inventory sheet; perpetual inventory, stock card; checking physical and perpetual inventories.

Topic 10 The business of the wholesaler

The function of the wholesaler, and how he gets orders.

Filling and invoicing orders—terms of sale, discounts, the invoice.

Recording credit sales—the sales journal, posting sales, credit invoice, sales returns and allowance journal.

Recording cash receipts for sales—four-column cash receipts journal, posting to customers' accounts, summarizing sales for month, closing journals.

The services of banks to wholesalers—loans, collections by draft, discounting negotiable paper.

Topic 11 Shipping goods

A study of the various methods of shipping different kinds of goods, the advantages of each, and the documents involved in shipping—mail, express, road transport, air, rail, boat, and special delivery services.

Topic 12 Sending messages

The writing of letters and reports should be developed throughout the course. No more than two common letter styles should be used. Some practice in filing is desirable.

The various services offered by the post office in the transmission of letters and other classes of mail.

The use of the telephone—the development of a pleasing voice and manner, different types of calls and how to place them.

Telegraph, cable, and radio services.

A brief study of careers open in the field of business.

Office jobs—the qualities, aptitudes, and skills necessary in the different types of work.

The courses available in the school—in day and evening classes, for those who desire a future in office occupations.

TYPEWRITING

The First Course in Typewriting

The first course in typewriting should provide pupils with a good basic skill, and should permit applications of that skill to tasks of interest to the particular group undertaking the study.

Emphasis should be placed upon the cultivation of correct techniques, so that the pupil who receives no further formal instruction may continue to develop as he uses the skill.

Topic 1 Mastering the Keyboard

A thorough mastery of the keyboard, including capitals, figures, signs, and punctuation marks, should be developed by the touch system. In this stage frequent evaluation should be made of posture, correct fingering, and operating techniques. Remedial exercises should be provided as required by the individual pupil.

The names and proper manipulation of the operative parts of the machine should be introduced as required.

Correct horizontal and vertical placement on paper of various sizes, and correct practice in syllabication and capitalization.

Pupils should be taught to appreciate the value of the equipment they use, and how to protect it by covering, dusting, and cleaning. Changing of ribbons may be taught.

Topic 2 Applications of Typing Skill

The correct placement and typing of simple letters, with envelopes. It is best to concentrate on one or two of the common letter styles.

Simple tabulation for paragraphing and for columnar work of an easy nature.

The making of neat erasures on the original and one carbon copy.

The resourceful teacher will capitalize on pupil interest by consulting with other teachers, and with the pupils in

the class, to organize suitable exercise material. Typing notes, essays, and reports required in other subjects is of general interest. With certain classes, special exercises may be devised; for example, pupils of a Home Economics course learn placement and tabulation by typing recipes for a card file. Such work is limited only by the skill and ingenuity of the teacher; it provides a strong incentive for the pupil to increase his skill in typing and to extend its application.

INDUSTRIAL ARTS

Aims

1. To help the pupil satisfy his need for accomplishment in changing materials into the forms desired.
2. To help the pupil develop his capacity to analyse, plan, and construct useful objects of good design.
3. To raise the standard of design and craftsmanship.
4. To help the pupil develop skill in the use of common hand and machine tools and in the use of common materials.
5. To foster interest in and respect for skilled manual work as a hobby or an occupation.
6. To help the pupil determine whether he possesses the aptitudes and interests required for success in the skilled trades.
7. To help the pupil develop skill in the interpretation and writing of concise directions, and in the application of mathematical knowledge to practical problems.
8. To help the pupil become a useful member of his family and working group.

General Suggestions

Courses of Study

The outlines of courses suggested for the various grades are to be used by teachers to guide them in the preparation of detailed courses of study or in the revision of their courses from time to time to meet changing conditions. The extent of the emphasis placed on topics within each division of the course will be determined by the particular needs of the local community.

Choice of Projects

Problem solving through the planning and construction of purposeful projects is the basis of teaching industrial arts. The pupil will choose projects which appeal to his interest, but the teacher will guide the pupil in his selection in order that the project may be suited to his stage of development. After making his selection, the pupil will plan the project, acquire the necessary skills, and carry the plan through to completion.

Development of Skills

Since pupils should develop skills in tool techniques as the need arises in the completion of a project, such skills will be taught as required and not as isolated exercises.

Safety Precautions

In all Shop Work where hazards are involved, instructors must conform to proper workshop methods and insist upon the use of recognized safety practices by the pupils. Machines should be equipped with adequate guards, and operations which cannot be completed with the guards in place should not be attempted.

Reference Books

Books for the assistance of the teacher and the pupils have been listed under the divisions to which they are particularly related. Those marked (*) may be borrowed for a period of two weeks upon application to the Inspector of Industrial Arts, Department of Education. Those marked (o) may be obtained for a similar period on application to the Librarian, Legislative Library, Parliament Buildings, Toronto.

Some general reference books are listed below.

*Wilbur: *Industrial Arts in General Education.* General.

*Ericson: *Teaching the Industrial Arts.* Copp Clark.

Jackey and Barlow: *The Craftsman Prepares to Teach.* Macmillan.

*Newkirk: *Organizing and Teaching the General Shop.* Copp Clark.

°Pratt: *I Learned from Children.* Musson.

Scope of the Programme in Industrial Arts

In Rural Schools and Urban Schools without Shop Accommodation

In these schools special programmes suited to the facilities available and to the interest and skill of the teacher should be developed. Although specialized training on the part of the teacher is desirable, much of the success of the work will depend upon his initiative and leadership.

Activities about the school, in the home, or on the farm will provide opportunities for carrying out a programme including planning, sketching, and the making of projects. Those activities suitable for rural or small urban schools have been marked with an asterisk in the outlines which follow. The teacher naturally will select an activity in which he has developed an interest and some skill.

In Elementary and Secondary Schools with Shop Accommodation

The following basic activities are generally included in the programme of the majority of organized centres:

1. Blueprint reading and sketching
2. Woodwork
3. Metalwork
4. One other activity

The organization of the course will be determined to a large extent by the shop facilities. Blueprint reading and sketching should be taken by all pupils. In some schools it may be integrated with the activities in woodwork and metalwork; in others it may be taken as one of the activities in a general shop. The time devoted to the fourth activity should not exceed one quarter of the total.

Where industrial arts is not taught prior to Grade IX, the teacher should select from the course outlined for Grades VII and VIII the elements providing the basic instruction essential to laying a foundation for the Grade IX course. A modified course may be prepared for girls who select Industrial Arts as an option.

Grade VII

Blueprint Reading

Reading of elementary working drawings to understand standard practice in relation to

Lines—object, hidden, construction, dimension, centre

Views — plan, elevation, and end view

Hidden surfaces

Specifications

Sketching

Sketches representing simple objects in full size with squared paper and by free-hand

Titles, lettering, and bills of materials incidental to the sketch

Analysis of simple geometric forms and essential measurements as they occur in the work of the course

Grade VIII

Blueprint Reading

More advanced drawings to develop greater facility in interpretation

Sketching

Representation of objects by using

Full scale with introduction of ¼ and ½ scale using three views

Full scale isometric

Grade IX

Blueprint Reading

Interpreting simple blueprints of familiar objects and shop projects using orthographic, isometric, and oblique (cabinet) projection

Lines—the purpose and characteristics of the object line, hidden line, centre line, construction line, extension line, dimension line, and arrowhead

Grade X

Machine Drawings

Working drawings of simple mechanical objects or tools involving conventional indications, threads, tapped holes, countersunk holes

Sectional views, methods of indicating the section and the materials

Assembly Drawings

Assembly drawings to various scales of objects composed

Working Drawings
Simple freehand sketching of working drawings to illustrate the correct placement and projection of views
Use of instruments in two and three-view working drawings to full size of
Simple rectangular objects
Angular objects formed of straight lines
Circular or semi-circular objects requiring the locating and dimensioning of circular openings and holes
Dimensioning
Geometrical constructions as required

Lettering
Single stroke freehand alphabet, figures and fractions, size and spacing, vertical or slant and horizontal guide lines
Application in notes and dimensions

of several parts for which various details are given

Geometrical Construction
The construction of regular figures, arcs, tangents, cubes, fillets
Drafting instruments to be introduced as required in the drafting projects

Development of Surfaces
Parallel line and radial line methods for layout of patterns
Rectangular objects such as a metal box or dust pan
Cylindrical objects such as a right cylinder, an oblique cut cylinder, two piece elbow, scoop
Allowances for laps and seams on patterns

Reference Books

*Diamond: *Primer of Blueprint Reading.* Ryerson.
Bartholomew and Orr: *Learning to Read Mechanical Drawings.* Copp Clark.
°Giesecke et al: *Technical Drawing.* Macmillan.
French and Svenson: *Mechanical Drawing.* McGraw-Hill.
Osburn: *Constructive Design.* Ryerson.
Varnum: *Industrial Arts Design.* Copp Clark.

Woodworking

Grade VII

During this year pupils should be encouraged to measure

Grade VIII

The teacher should attempt to secure greater accuracy in

and work to a reasonable degree of accuracy.

Operations
- Use of common hand tools
- Squaring stock on four sides
- Decorating—by bevel chamfer, chip carving, applique, addition of metal, paint, stain
- Finishing—by sanding, painting, staining, shellacking, and waxing (avoid varnish unless perhaps fast-drying varnish)
- Sharpening — screwdriver and knife
- Scroll saw—the proper use and care in cutting sample scrolls

Grade IX

Materials
- Lumber—as found in the shop, recognition of common woods, seasoning of lumber, units of measurement and stock sizes

Sundries
- Glue—kinds, sources, preparation, and use
- Hardware—types and specification for common nails, wood screws, and other hardware in common use
- Finishing materials—characteristic properties, uses and limitations of stain, shellac, wax, paints (flat, gloss, enamel)

Operations
- Bill of material made from blueprint or drawing

Grade VIII. Every opportunity possible should be utilized for the cultivation of more accurate expression and more creative effort by the pupils.

Operations
- Operations as listed in Grade VII
- Squaring stock—six sides
- End planing
- Joining and gluing—use of hand and bar clamps
- Finishing—the addition of enamelling and filling to previous methods (varnishing not desirable)
- Interpreting a simple bill of material and an elementary working drawing

Grade X

Materials
- Lumber—common Canadian woods, plywood, composition board, dowel rod
- Hardware—hooks, hinges, locks of various kinds
- Finishing materials — stains, fillers, shellac, varnish, paints

Hand Tool Operations
- Laying out, sawing, planing, squaring and truing to size, chamfering, chiselling, shaping, boring, fastening, scraping, sanding, finishing
- Fitting hand rip and hand cross-cut saws, sharpening tools such as scrapers and auger bits
- Gluing and clamping, gluing for width, gluing and clamping frames

Laying out, selection of pieces to avoid waste, cutting to a layout plan
Squaring—steps in truing to size
Chamfering—plain and stop
Chiselling—horizontal and vertical
Shaping—use of coping saw, spokeshave, rasp
Boring—use of various types of bits and depth gauge, boring for screws and dowels
Fastening—selection and use of nails, screws, glue
Clamping—regular and irregular shapes
Finishing, care of brushes
Tool sharpening—whetting of plane irons and chisels
Proper storage of materials with special emphasis on finishing materials and fire hazards

Machine Tools and Operations
Scroll saw or band saw—sawing simple scrolls
Drill press—boring operations, sanding
Lathe—simple faceplate and spindle turning

Machine Tools and Operations
Variety saw, cross-cutting, ripping
Band saw—sawing curves
Scroll saw—sawing scrolls, piercing
Drill press—boring, mortising, routing
Jointer—jointing edges
Lathe—rough and finish turning to size, shoulder and taper turning, turning more elaborate curves, larger faceplate work
Grinder—grinding the common tools used in the shop

Reference Books

°Lair: *Carpentry for Building Trades.* McGraw-Hill.
*Tustisan: *Unit in Hand Woodwork.* Bruce, New York.
South: *Machine Woodworking.* Moyer.
°Hjorth: *Principles of Woodworking.* Bruce, New York.
°Hjorth: *Basic Woodworking Processes.* Bruce, New York.
Cramlet: *Woodwork Visualized.* Ryerson.
*Vanderwalker: *Woodfinishing.* General.
Sowers: *Visualized Projects in Woodworking.* McGraw-Hill.
Sowers: *Woodwork Through Visual Instruction.* General.

°Dank: *Creative Crafts in Wood.* Copp Clark.
Johnston and Newkirk: *Woodcraft.* Webb, Milwaukee.

Household Mechanics

Grade VIII

Elementary maintenance of household and personal equipment such as
- Locks
- Hinges
- Faucets
- Windows and screens
- Electric cords
- Utensils and other metal ware
- Garden tools and accessories
- Leather goods and other personal equipment

Grade IX

Rope Work
- Common knots and uses—bight, over-hand and under-hand loop, over-hand knot, figure of eight, square, bowline, sheepshank, clove hitch, well-pipe hitch, round turn and two half hitches, miller's knot
- Whipping an end
- Crowning and tucking
- Short splice
- Use and care of rope

Glazing
- Removing putty, priming sash, cutting glass, glazier's points, puttying

Utensil Repair
- Soldering, riveting, commercial menders, making and replacing handles

Grade X

Rope Work
- Long splice, eye splice, adjustable halter
- Kinds and grades of rope
- Pulleys and blocks
- Wire tighteners

Leather Work
- Leather tooling and lacing
- Belt lacing
- Elementary shoe repair

Electricity
- Simple bell circuit
- Care and use of storage battery
- Repairing appliances — switches, receptacles, iron, toaster

Concrete Work
- Aggregates—selecting and testing aggregates, proportions and mixes

Leather Work
- Cleaning and oiling, riveting (two types), stitching, attaching fittings
- Repairing leather goods

Concrete Work
- Keene cement, ornamental concrete
- Small plaster repairs—plaster of Paris, use of deterrent

Sharpening
- Household equipment

Electricity
- Fuse—purpose, overload and short
- Shock hazard
- Cords—plain extension, appliance

Woodwork
- Minor repairs about the home

- Concrete equipment and care of same
- Pouring concrete in prepared forms

Tool Sharpening
- Knives, mower knives, pruning hook, cultivator teeth

Pipe Fitting
- Black and galvanized iron pipe in stock sizes
- Cutting, reaming, threading, assembling
- Common pipe fittings

Woodwork
- Carpentry and furniture repair about the home

Reference Books

*Bedell and Gardner: *Household Mechanics.* General.
*Johnston and Newkirk: *Home Mechanics.* Macmillan.
*Woodwin: *Home Mechanics for Girls.* General.

Sheet Metal Work

Grade VII

Operations
- Layout, scribing, cutting, forming, soldering
- Recognition and use of tinplate, galvanized iron, and black iron
- Tin can work

Grade VIII

Operations
- Punching, riveting, folding, hemming, tinning, soldering copper
- Centre line development
- Simple rectangular development

Grade IX

Materials
- Galvanized sheet iron, black iron, and tinned iron, common uses, advantages, stock sizes, and gauges
- Solders—common solder, composition, reasons for different alloys
- Fluxes—purpose

Hand Operations and Tools
- Laying out—use of measuring and marking tools, use of templates, making seam allowances
- Reinforced edges — single, double, and standard folds
- Cutting—cutting on straight lines, notching, and outside curves
- Folding and forming—in the construction of simple rectangular objects
- Soldering
  - Soldering iron—oxidation, tinning, design for transference of heat
  - Process—heating the iron, correct position of iron, use of flux and solder
- Joining objects involving seams and joints such as lap seam, hooked joint, double seam
- Riveting

Machine Operations
- Adjustable bar solder, types of folds (open, close, and double), setting and locking gauge
- Bending brake—method of operating for bending ma-

Grade X

Hand Operations and Tools
- The operations of Grade IX continued in rectangular and circular objects
- Laying out, transferring dimensions from a blueprint or drawing to the sheet metal, use of indentations for locating bending lines on reverse side of material
- Cutting
- Folding and forming—use of hollow mandrel, square, round, blowhorn, or improvised stakes in forming cylindrical shaped objects
- Joining corner lap joints, grooved joint
- Soldering—tacking, application of solder into seam
- Reinforcing edges, the wired edge

Machine Tools and Operations
- Names of main parts, proper use, adjustments, and precautions to be observed for the slip roll former
- Operations—folding, locking, rolling

Slip roll former

terial in the construction of simple straight-lined objects

Sheet Metal Finishes
Methods of preparing various sheet metals to take protective or decorative coatings

Reference Books

°Newbecker: *Sheet Metal Work.* General.
°Dickason: *Geometry of Sheet Metal Work.* Pitman.
*Williams: *New Tinsmith's Helper and Pattern Book.* General.
*Hedley: *Basis of Sheet Metal Drafting.* Longmans.
°Ludwig et al: *Metal Work.* Moyer.
Paterson: *101 Metal Working Projects.* Ryerson.

Art Metal Work

Grade VII

Materials
Brass, copper, aluminum sheet

Operations
Laying out, cutting, bending or forming, filing, finishing

Projects
Tags, bracelets, paper knives

Grade VIII

Materials
Brass, copper, aluminum sheet, soft solder fluxes, and wire (round and flat)

Operations
Laying out, cutting, bending or forming, filing, finishing, soldering, raising, annealing, etching

Projects
Trays, brooches, buckles, desk sets

Grade IX

Materials
Copper, brass, iron, aluminum in sheets; flat and round wire, soft solder and fluxes; a study to be made, incidental to the making of the project, of the proper-

Grade X

Materials
Copper, brass, aluminum, pewter, silver, small diameter pipe, soft and hard solders and fluxes, polishing compounds

ties of the materials, trade description, stock sizes, gauges

Operations
Laying out; cutting; bending; scroll forming; raising shallow round, square, or oval trays or dishes; annealing; planishing; etching; piercing; drilling; countersinking; riveting; soldering; sweating; threading with taps and dies for small machine screws; finishing

Operations
The operations of Grade IX extended to include the use of needle files, stakes, and tools for forming special shapes and edges in raising operations; surface decorations by line chasing and matting, and by the application of contrasting metals soldered or riveted in place
Soldered and riveted butt and lap joints
Finishing, buffing, acid cleaning to remove scale; hammered effects; high lighting and coloured finishes

Reference Books

Kronquist: *Art Metal Work.* McGraw-Hill.
Kronquist: *Metalcraft and Jewelry.* Copp Clark.
Payne: *Art Metal Work with Inexpensive Equipment.* Copp Clark.
*Smith: *Units in Etching, Spinning, Raising, and Tooling Metal.* Moyer.
*Hamilton: *Tin Can Craft.* McClelland.

Forge, Ornamental Iron, and Welding

Grades VII and VIII

Ornamental iron work may be explored in Grades VII and VIII using narrow band flat wire and rod iron in conjunction with materials used in other activities.

Grade IX

Equipment and Materials
Trade description of such tools, equipment, and materials as may be required for this course

The Forge Fire
Selection of fuels, arrangement of fuels and proper

Grade X

Forge Operations
Cutting, bending in the bending fork, upsetting, forging round to square, forging square to round

Heating Treatment
Workability of various metals
Shop tests for distinguishing

maintenance of fire, temperatures required for metal working

Forge Operations
Heating; cutting with hot or cold set; bending, drawing, forging a flat; punching

Vise Work Operations
Laying out, cutting with hack saw, filing, drilling (hand drill), countersinking, riveting, finishing
Tapping and threading, tapping a through hole, relation of tap and drill sizes, precautions, use of proper cutting oil, threading with a die

Ornamental Iron Work
Functional design with method of fabrication in view
Cutting by cold chisel, shears, and special tools
Forming scrolls, leaves, and designs

metals
Simple hardening of steel—heating, water quenching, testing
Tempering — preparation of steel, recognition of colour scale, quenching, testing

Vise Work Operations
Cutting with cold chisel
Tapping and threading
Tap drill sizes, national coarse and national fine threads, precautions in use of taps
Threading with a die, adjustment of die, pipe threads, and pipe sizes
Ornamental iron work

Reference Books

Bollinger: *Elementary Wrought Iron.* Ryerson.
*Bick: *Artistic Metal Work.* Ryerson.
*Smith: *Units in Forging and Welding.* Moyer.
Harcourt: *Elementary Forge Practice.* Copp Clark.
Groneman: *Elementary and Applied Welding.* Ryerson.

Applied Electricity

Grade VII **Grade VIII**

The aim of this course is to train the pupil, as a future householder, to use electrical service safely and intelligently. Suitable problems and activities are listed below.

Handling low voltage current and equipment
Some reading of symbols

Properties of conductors
How to use dry cells
Circuits
Simple experiments to show resistance of wires
Bells and installations
How to repair a defective cord for lamp or iron
How to test and replace a fuse
Reading a meter
Making of an electro-magnet and testing it

Grade IX

Simple Circuit—using low potential to illustrate
- A complete path—closed circuit
- An open circuit
- The flow of electricity from the source back to the source
- A short circuit—fuse protection

Signal Circuits
- Front and back door bell system
- Two-chime system

Wiring
- Making an extension cord or wiring a table lamp
- Making or repairing an appliance cord

Economic Use of Electrical Appliances
- How to read the kilowatt-hour meter
- How to compute the domestic service bill
- Average costs of operating the common electrical appliances

Grade X

Series and Parallel Circuits (Observe brilliance only. No electrical measurements necessary.)
- A circuit with a fixed load in which dry cells as a source of current may be added one at a time in series and in parallel, the general effect on the load observed and recorded
- A circuit with a constant supply voltage and the load units added one at a time in series and in parallel, the general effect observed and recorded
- A circuit with fixed voltage and fixed load having controlling devices in parallel
- A circuit with constant supply voltage, variable lamp load, each lamp having its own controlling device

Home Safety—experiments to show
- Shock hazard of grounded objects, such as radiators, laundry equipment
- Fire hazard of defective cords, temporary wiring

Elementary study of a few common metals and non-metals as conductors and insulators

Circuit Protection of Household Circuits

The simple fuse as a device for protecting circuits and equipment, types of fuses, the safe carrying capacity of standard wires and cables used in the home

Elementary electronics if time and equipment permit

Reference Books

*Ashcroft and Easton: *General Shop Work.* Macmillan.

Machine Shop Practice

Grade IX

Hand Tools and Bench Work

Trade description and use of such tools and equipment as may be required for this course

Layout Work

Coating of metal surfaces to facilitate layout

Use of steel rule, dividers, scriber, hermaphrodite caliper, and punch in laying out work from blueprints or drawings

Centering work for drilling

Machine Tools and Operations

Lathe—names of main parts, setting up work in machine for 3-jaw chuck and turning between centres, end facing, rough turning, knurl-

Grade X

Hand Tools and Bench Work

Riveting, threading, tapping

Layout Work

Preparing metal surface to facilitate layout

Use of common tools in laying out more difficult work from drawings

Machine Tools and Operations

Lathe—various turning operations between centres and on work mounted in chuck, knurling, cutting tapers

Drill press—preparation of work for drilling, use of vise and V-block for mounting work, selection and mounting of drills

Grinder—rough grinding, grinding to size, tool grinding

ing, shoulder turning, finish turning to size and polishing
Drill press—names of main parts, operation and maintenance, preparation of work for drilling including marking with centre punch, use of cooling and cutting compounds
Grinder—safety precautions and use of goggles, rough grinding to remove hard skin of material, rough grinding to bring material to size

Reference Books

°Knight et al: *Machine Shop Projects*. Moyer.
°Burghardt: *Machine Tool Operation*. McGraw-Hill.
How to Run a Lathe. South Bend Lathe Works.

Applied Machinery Mechanics

The chief objective of teaching Applied Machinery Mechanics is to make the pupil acquainted with the general mechanical principles involved in machines commonly used in the school. Pupils should be given opportunities to make simple repairs, and to plan and construct simple machines. The following machines are satisfactory subjects for study in the grades indicated: Grades VII, VIII, and IX—lawn mower, bicycle, washing machine; Grade X—pumps, water systems. A detailed course of study in this subject may be obtained from the Inspector of Industrial Arts.

Frames
  Properties of construction materials
  Repairs
Mechanical Linkages
  Transmitting power
    rotary
    reciprocating
  Changing direction of power
    gears
    belts
    eccentrics, cams, pitmans

- Power take-off
  - splines
  - square shafts
- Fastening units
  - set screws, bolts, and nuts
  - keys, cotters, pins

Bearing and Lubrication

- Rotary power bearings
  - plain
  - ball
  - roller
- Reciprocating power bearings
  - guides, slides, and ways
- Lubricating
  - fittings
  - oilers

Clutches

- Positive acting clutches
  - pawl and ratchet
  - sliding ratchet
  - dog and stop
  - eccentrically mounted countershaft
  - sliding gear
- Slipping clutches
  - disc and cone
  - slip-spring-loaded reversible (ratchet)
  - expanding sleeve

Hydraulics

- Water pumps
  - the operating principles of the single and double stroke piston pump
  - other types of pumps—jet, vane, rotor-stator, and gear
- The hydraulic ram
- The hydraulic jack
  - the principles of hydraulics as applied to the simple hydraulic jack

General information

- Lubrication
  - lubrication systems
  - types and uses of various lubricants and greases
- Fuels
  - properties and selection of fuels

Safety
- danger of products of combustion such as carbon monoxide in the internal combustion engine
- rules and regulations of the Highway Traffic Act
- mechanical hazards
- fire hazards

Reference Books

°Fairies: *Design of Machine Elements.* Macmillan.
Berard and Waters: *Machine Design.* McClelland.

Other Activities

Any of the following activities, as well as others which may be suggested by the teacher and recommended by the Co-ordinating Committee, may be chosen to supplement the course.

General Handicraft Books

*Griswold: *Handicraft.* Griswold, Colorado Springs.
Tokis: *Arts and Crafts.* Copp Clark.
Newkirk and Zutter: *Crafts for Everyone.* General.
Reynolds: *Complete Book of Modern Crafts.* McClelland.
Hamilton: *Handicrafts for Girls.* McClelland.
Native Trees of Canada. Dominion Forest Service, Department of Natural Resources, Ottawa.
Parkhill: *It's Fun to Make Things.* Copp Clark.
The New Handcraft Book (Junior Grades). Moyer.
The Home Workshop. Ryerson.
*Johnson and Newkirk: *The Textile Arts.* Macmillan.
*Summer and Andruth: *Handbook of Silk Screen Printing Process.* Arthur Brown, New York.

*Plaster Casting

Grade VII

Materials
- Plaster of Paris
- Moulding plaster
- Keene's cement
- Simple wooden or rubber moulds

Processes
- Designing
- Mould or form construction

Grade VIII

Materials
- Plaster of Paris
- Moulding plaster
- Keene's cement
- Simple wooden or rubber moulds
- Medusa and Portland cements

Processes
- Designing

Mixing
Casting
Finishing

Mould or form construction
Mixing
Casting
Finishing
Turning (where practicable)

Reference Books

Radke: *Keene's Cement Craft.* Ryerson.

*Leather Work

Grades VII and VIII

Operations

Cutting, thonging, stitching, colouring, dyeing, cutting thong or lace, tooling

Projects

Key cases, wallet, billfold, bookmark, bookcover, handbag

Reference Books

Dean: *Leathercraft, Techniques and Designs.* Moyer.
Groneman: *Applied Leather Craft.* Copp Clark.
Thompson: *Leathercraft.* McClelland.

Ceramics

Many of the finest ceramic products have been developed from clays found in the local community.

Grades VII and VIII

Operations

Modelling, baking

Projects

Tiles, costume jewellery, cups, mugs, plates, vases

Reference Books

*Snively: *Pottery.* Stephen Daye.
Kenney: *Complete Book on Pottery.* McLeod.

Lapidary Work

Grades VII, VIII, IX, and X

Operations

Breaking, cutting, lapping, grinding, polishing, mounting on copper, pewter, silver

Projects

Displays, setting in ring blanks, jewellery, paper weights

Reference Books

*Baxter: *Jewellery, Gem Cutting, and Metal Craft.* Copp Clark.
*Glass: *Jewellery Craft.* Pitman.
**Revised Lapidary Handbook.* Howard.
*Weiner: *Handmade Jewellery.* McClelland.

*Plastics

Grade VII

Operations

Cutting, filing, bending, twisting, cementing, buffing, polishing

Projects

Pendants, bracelets, paper knives

Grade VIII

Operations

Forming, piercing, surface decoration and dyeing

Projects

Trays, boxes, desk sets

Grades IX and X

Operations

Internal carving, laminating

Projects

Cribbage board, paper weight, picture frame, lamps, laminated pieces

Reference Books

Adams: *Plastc Art Crafts.* McClelland.
Mansperger and Pepper: *Plastics.* General.
Dunham: *Working with Plastics.* McGraw-Hill.
*Newkirk et al: *Adventures with Plastics.* Copp Clark.
*Leeming: *Fun with Plastics.* Longmans.

HOME ECONOMICS

Nature of the Programme

"One of the basic principles of democracy is the assumption that the family is the most significant of all social institutions". Home Economics is that phase of education which is especially designed to help the individual live a more useful and satisfying family life. Inseparable from this are the further goals of happy and successful personal and community living.

Home Economics includes all phases of homemaking with emphasis on personal and social development. It aims to provide a variety of experiences and activities based on real-life situations with a view to discovering the basic principles underlying each. With some understanding of these basic principles girls and boys are better able to solve their problems of personal and family living.

It is important to note that the family is not a static institution but one which is undergoing continuous modification. Changing economic conditions, social standards, and political organization all make their impact upon family living, ever forcing it into new and different patterns. It is equally important to recognize the diversity of community and family living at any given point of time. This diversity is true of communities within a relatively small geographic area. It is true of families even within a small community. An educational programme must endeavour to meet the problems which emerge because of these ever-changing and complex conditions.

Fields which can be effectively explored in the Home Economics classroom are: child care and development, clothing and textiles, family and personal economics, food and nutrition, health, home management, housing, and human relations.

The Home Economics programme must be adjusted to the needs of children with differing home and community backgrounds and cannot, therefore, be stereotyped.

Factors Influencing the Home Economics Programme

Among the factors influencing a teacher in planning an effective Home Economics programme the following are important:

1. The pupils—their personal characteristics, needs, and interests, their past experiences, their home, and community background;
2. The body of knowledge and experiences which Home Economics has to offer;
3. The relationship of Home Economics to other subjects of the school programme and to the general life of the school;
4. The accommodation and equipment provided for the use of the pupils at school, at home, and in the community;
5. The time allotted to Home Economics;
6. The size of the classes.

From the foregoing it is clear that one of the first responsibilities of the teacher is to become acquainted with the pupils, with their family life, with the school organization, and with the community.

Knowing the Pupils and Their Families

Cooperation between teachers, pupils, and parents is worthwhile in all child education and is essential in planning a homemaking course. If the teacher is to meet the needs of the pupils as individuals and as members of a family, she should secure as much information as possible relative to their:

chronological, mental, and social maturity levels
academic achievement
previous participation in Home Economics activities at home or school
present Home Economics achievement level
health record
future plans
hobbies and social interests
responsibilities within and outside the home
family background
community background
economic, religious, and cultural backgrounds

Helpful information may be obtained through pupil questionnaires, school records, pre-tests, discussion and observation, visiting the homes, inviting the parents to the school, the Home and School Association, and other sources.

Knowing the School

The teacher, particularly one who is new in the school, must discover as much as possible about the life of the school. She will wish to have information concerning:

the aims of education in the school
the total number of pupils and the number in each grade
organization
the school building
the extra-curricular programme
content of other courses
school services

This information may be obtained through talks with the principal, the staff members, and those in charge of special services, through reading school calendars and courses of study, and through observation.

Knowing the Community

No two communities are alike in their socal, economic, and political structures. To institute the most appropriate type of Home Economics programme, the teacher should be interested in her school community, giving attention to:

density of population
diversity of population
housing
income levels
nature of its industrial life
cultural interests
church programmes
social agencies
recreational opportunities

Building the Programme—A Cooperative Approach

To make the programme purposeful and stimulating to the pupils and to relate it directly to their daily living, it is desirable that the pupils share with the teacher in planning, carrying out, and evaluating the learning experiences. The

role of the teacher is one of motivation and guidance. At first the pupils' share of responsibility will be limited, but as the pupils grow in experience, and as the teacher and pupils become better acquainted, the pupils will gradually assume a greater share of responsibility.

Advance Planning by the Teacher

Having studied the factors influencing the programme, the teacher will set up for herself objectives for the year and tentative units of work which will help accomplish them. She will devise methods for carrying out day-by-day activities which will inspire and maintain interest.

Pupils and Teacher Plan and Work Together

At the beginning of the year and at the beginning of each new unit, the teacher will discuss tentative goals with the students, using illustrative material, references, and other teaching aids. This will help the pupils establish their own goals and make plans for achieving them. Pupil activity, guided and assisted by the teacher, will follow.

Pupil-Teacher Evaluation

Frequent evaluation of progress is an essential part of teaching. When pupils share in this, it helps them to measure their achievement and to plan for further experiences.

Classroom Organization

This will vary with the grade level, the goals desired, the facilities available, the school organization, the time allotted, and the size of the classes.

In fully equipped Home Economics rooms the experience which pupils gain by working individually or in groups will help prepare them for the problems they face in daily living. It is important that each member of the class participate in all phases of the work and that a good balance be maintained among the different aspects of homemaking.

The Home Economics rooms of today are designed and furnished to reproduce as nearly as possible an authentic home atmosphere. Provision is made for pupil participation and efficient teacher supervision in the following areas: living room, dining room, kitchen, laundry, bedroom, and sewing centre. These may be included in one all-purpose

room or in a combination of specialized rooms. The furnishings and equipment should be adapted to the home life of the community and at the same time establish standards of good taste.

Homemaking Experiences Outside the Classroom

Homemaking experiences may take place in the school, at home, or in the community as well as in the Home Economics classroom. When selected with care, they are a very effective means of creating family and community interest in Home Economics programmes; at the same time they contribute to the pupils' understanding of citizenship. To achieve these objectives the homemaking experiences should be within the ability of the pupils and related to their classroom work.

Within the School

Because of its specialized programme, equipment, and accommodation, the Home Economics department should have a unique place in the life of the school. Correlation of Home Economics with such other subjects as Art, Physical Education, Science, or Social Studies is essential in the planning of an integrated programme for the general education of the pupils.

Cooperation in special school activities is equally desirable. Such cooperation may take the form of offering simple and gracious hospitality to guests of the school and to staff members, making simple clothing for the Junior Red Cross or other welfare activity of the school, assisting in making the school tidy and attractive. The teacher and pupils may find opportunity for service to other teachers in planning and carrying out nutrition programmes and other activities correlated with home and family living in their home classrooms. These will vary from school to school and from class to class.

At Home

To secure a "carry-over" to the home it is desirable that every pupil undertake one or more projects at home. These should be interesting to the pupils, adapted to their abilities, related to their school work and, above all, make a contribution to the home life of the girl and her family. Projects selected in Grades VII and VIII will be simple and of short

duration; in Grades IX and X they will increase in difficulty.

In the Community

From time to time the homemaking pupils may have opportunity to take part in special community activities outside the school. Such participation will be mutually beneficial. For example, a community nutrition campaign may provide the motivation for further study and practice of good nutrition in the homemaking classes; at the same time the interest of the pupils strengthens the community programme. This is education in practical citizenship.

Home Economics in the Ordinary Classroom

Where it is not possible, as is the case in small rural schools, to have a fully equipped homemaking room and a specialized Home Economics teacher, the classroom teacher may achieve some of the objectives of Home Economics education if the whole school programme is viewed as the area in which pupils may work. Is the classroom as homelike and attractive as it can be? What knowledge of nutrition, good table manners, or personal cleanliness may be taught in connection with the school lunch or in correlation with other subjects? What home handicrafts may be introduced with little specialized equipment? What experience in caring for and understanding small children may be gained through observing and helping children in junior grades? From a course of study like the one suggested here, the teacher can select those topics which best meet the needs of the pupils and which may be carried on within her particular school or room. Both girls and boys should participate.

If a limited amount of equipment is provided, this programme may be expanded. For experience in food preparation, the minimum large equipment required includes: sink and water supply, work space, stove, storage space, and a small table which may be used as a dining table. For machine sewing, a sewing machine and adequate work surfaces are essential.

Home Economics for Boys

Concern for the democratic way of life suggests that all members of the family participate intelligently in making the home a happy and satisfying place in which to live.

It follows, therefore, that boys as well as girls require guidance to help them grow in their ability to make wholesome personal and social adjustment as members of a family group.

From the viewpoint of the individual, the home, and society, the study of Home Economics has much to offer to boys. Their interests will differ in many respects from those of girls, but a suitable programme will help them to understand the responsibilities of other family members and to see their own share in the life of the home more clearly. Boys will be interested in and benefit from such experiences as the selection, preparation, and serving of simple food, the selection and care of clothing, personal finances, and personal relationships with other people.

The amount of time allotted to Home Economics for boys will be less than that for girls. It may be planned as a special unit to enrich the regular school programme or as an exchange of classes between Industrial Arts and Home Economics for units of a few weeks. Such short courses have been tried out successfully in several schools in Ontario.

Evaluating the Programme

From time to time the Home Economics teacher should appraise the effectiveness of what is being done. In doing this the following questions may well be considered:

1. Does the programme provide experiences which take into consideration the characteristics, interests, and needs of adolescents?
2. Are the experiences so real and life-like that the pupils are stimulated to use their new knowledge and skills in their personal, family, and social living?
3. Is the programme sufficiently flexible to provide for individual differences in pupils?
4. Does it develop initiative, resourcefulness, and cooperation?
5. Does it promote happiness and enthusiasm?
6. Have the pupils had their share in planning the programme and in evaluating their learning?

7. Is the programme an integral part of the school life?
8. Is it adapted to meet the needs of the community which the school serves?
9. Does the programme reflect the philosophy of a democratic society?
10. Does the classroom environment inspire the pupils to create, now and at some future time, a functional and attractive environment in the home?

Outlines of the Course

The outlines which follow are offered as guides to teachers in planning detailed courses of study for local schools. Although the course has been divided into several divisions, the underlying purpose of all is that of developing satisfying personal, family, and social relationships.

Suitable units of work and experiences should be developed by each teacher in cooperation with the pupils. Some of these units may be planned to include activities from various divisions of the course, e.g., entertaining guests of the school will involve activities related to the topics on the family, the home, and food; a unit on child care will include learnings from all divisions of the Home Economics course.

In setting up the course for a class, the teacher should refer to "Factors Influencing the Home Economics Programme", and to "Building the Programme" in the preceding general information. In addition, the following suggestions may be of help:

(1) Emphasis should be placed upon the practical work which should occupy from two thirds to three quarters of the total time.

(2) Projects selected should not be too long in duration.

(3) The time should be divided to give about one third of the total time to each of The Family and The Home, Clothing and Textiles, Food.

(4) The suggested topics need not be taken in the order listed. Consideration needs to be given to such factors as coordination with other curricular and extra-

curricular activities of the school, the season of the year, holidays, and the need for a well-rounded Home Economics programme.

Grades Seven and Eight

The course for Grades VII and VIII is planned as a two-year sequence and serves as the foundation for further study in Grades IX to XII. Since the course in Grades VII and VIII is the introduction to Home Economics, it is important that the programme stimulate interest. The girls in these grades have a strong family tie but are developing an increasing feeling of independence. Hence they are interested in experiences which are related to their own personal development and which help them to get along better with their friends and family.

The Family

Grade VII

Grade VIII

The role of the girl in the family is the theme around which activities and experiences in Home Economics will be planned. Pupils will have abundant opportunity to learn to get along well with others through participation in homemaking activities in the classroom, through observation both in the classroom and outside, and through discussion. All experiences should be planned so that the pupils will learn:

- ways in which to assume more responsible family membership,
- ways in which to become socially more competent with other girls and boys and with adults,
- ways in which to become better citizens in the school and community.

The Girl's Role in the Family	The Girl's Role in the Family
Respecting the rights of others	Sharing work and play
Sharing work and play	Being mannerly
Being mannerly	Caring for younger brothers and sisters
Caring for younger brothers and sisters	Caring for personal belongings
Caring for personal belongings	Helping entertain in the home
Using leisure time	Using leisure time
	Learning how to get along with others
	Managing money

Developing an Understanding of the Family

Appreciating the roles of family members
Sharing the privileges and responsibilities of family living
Respecting the rights of others

Entertaining

The Home Economics classroom provides opportunity for girls of this age to develop some confidence and skill in helping with simple entertainment of guests at school and at home.

Tea for guests at home and at school
Special occasions—birthdays, holidays

Entertaining

Tea for guests at home and at school
Special occasions — birthdays, holidays
Picnics
Simple refreshments

The Home

Grade VII

The modern homemaking classroom provides an excellent opportunity for practical experience in making a room livable, homelike, and attractive.

Activities in this field will be based on the girl's responsibilities at home and at school, and should be planned to:

create an awareness of the work involved in keeping a home tidy and attractive,
develop skill in housekeeping activities,
develop a pride in a well-kept home or school.

Making the Home and School Attractive

Needlecrafts — simple accessories for the home or school
Flower arrangements

Grade VIII

Making the Home and School Attractive

Needlecrafts — simple accessories for the home or school
Flower arrangements
Furniture arrangement in the classroom

Helping to Care for the Home and School

Sharing in housekeeping tasks
Sharing in keeping the school clean and orderly

Helping to Care for the Home and School

Sharing in housekeeping tasks
Sharing in keeping the school clean and orderly
Caring for one's room at home

Laundry

Washing and ironing simple household articles and aprons in the classroom

Laundry

Washing and ironing simple household articles and aprons in the classroom

Safety

Practising safety at home and school

Safety

Learning how to make the home and school a safer place

Food

Grade VII

Grade VIII

The experience and activities should be planned to achieve the following aims:

to create interest and pride in the art of good food preparation
to put into practice the principles of meal planning
to learn basic principles of cookery
to learn to prepare food of good standard
to learn to read and follow recipes
to establish good work habits
to practise economy
to develop ability to work together

The selection of foods to be prepared will depend on such factors as the age, experience, and previous training of the pupils, their family and community backgrounds, the cost and availability of food, the availability of equipment. Consequently the foods prepared will vary in different classes.

Helping With the Family's Meals

Helping to prepare attractive and simple suppers and breakfasts using Canada's Food Rules
Making meals pleasant table setting

Helping With the Family's Meals

Learning to plan, prepare, and serve attractive and simple meals using Canada's Food Rules
Making meals pleasant table setting

serving
good manners at mealtime
Cleaning up after meals

Helping in the School
Special occasions

Buying Food
For meals prepared at school
Shopping for the home

Nutrition for Health
Developing good food habits with special reference to breakfast and the school lunch

serving
good manners at mealtime
Cleaning up after meals
Preparing a tray for breakfast or sickroom

Helping in the School
Special occasions
Kindergarten

Buying Food
For meals prepared at school
Learning to be a good shopper

Nutrition for Health
Canada's Food Rules and how to apply them

Clothing

Grade VII

Learning to Look One's Best
Personal cleanliness
Care of clothing
Simple repairs of clothing

Learning to Sew by Hand and Machine
For personal use—simple cotton garments
For members of the family—gifts

Grade VIII

Learning to Look One's Best
Good grooming
Keeping clothes attractive
Selecting suitable clothes for a Grade VIII girl

Learning to Sew by Hand and Machine
For personal use—simple cotton garments
For members of the family—gifts
For others, e.g., Red Cross

Simple garments or household articles which are in vogue and which meet the needs and abilities of the pupils should be chosen. Simple patterns which provide opportunity to learn the basic skills of sewing by hand and machine should be used. Careful preparation of the material for sewing and the use and care of tools, including safety precautions, should be stressed.

Care of Clothing
Simple repairs

Care of Clothing
Simple repairs

Needlecrafts	Needlecrafts
Simple articles	Accessories for personal use
Knitting	Knitting
Simple embroidery	Embroidery
	Weaving

Grades Nine and Ten

In Grades IX and X Home Economics is an optional subject. As such it must serve the following purposes:

1. To promote the personal development of the pupils and to prepare them to take their place in family and community life, whether or not they continue the subject in the senior division;
2. To lay a foundation for more advanced study in Grades XI and XII for those pupils who elect to continue the option.

When pupils have studied Home Economics in Grades VII and VIII, the course in Grades IX and X will be built on this foundation. When pupils are studying Home Economics for the first time in Grades IX or X, the course will have to be adapted to the abilities and past experiences of the pupils.

Home Economics may be selected for one year only in either Grade IX or Grade X, or as a two-year option in both Grades IX and X.

Two courses, Option A and Option B, have been suggested. When Home Economics is taken in both grades, it is preferable that Option A precede Option B, but if necessary Option B may be taken before Option A.

When Home Economics is taken in either Grade IX or Grade X for one year only, selections may be made from Option A and Option B to provide a well balanced programme.

Personal, Family, and Social Relationships

Option A

Option B

In Grades VII and VIII the role of the girl in the family has been emphasized. As the girl matures, her responsibilities in the family grow, and she becomes increasingly

aware of herself as an individual and of her place in society. These characteristics determine the nature of this part of the course in Grades IX and X.

Although many of the desired learnings will be outcomes of work done in other parts of the course, five topics have been selected for consideration here because of their importance in human relationships.

Living in the Family Group

An appreciation of the privileges and responsibilities of living in the family may be developed by emphasizing the following services which the home provides:

- protection, food, shelter, clothing, early training and education
- background for the use of leisure time, recreation, hospitality, and friendships
- companionship within the family and the sharing of work and pleasures
- the contribution of homemaking activities to family living

Short discussions on the above topics at opportune times will help the pupils appreciate the values of family life and the contribution of various members to the family. Many of the elements of good family living are to be found in the school room and the school environment. It follows that the recognition and practice of these attitudes in the school will contribute to their successful recognition and practice in the home.

Hospitality

Throughout the whole course opportunity will be provided to develop a wider appreciation of the meaning of hospitality and the art of being a good hostess and a welcome guest. Desirable learnings include:

- Duties of the hostess
  - writing invitations
  - making introductions
  - conversation
  - entertainment
  - preparing and serving refreshments
- Duties of a guest
  - prompt acceptance or refusal

responsibilities at a party
responsibilities as an overnight or weekend guest
How to act in public places
Suggested activities:
Simple entertaining
at school—for parents, fellow pupils, staff members, guests of the school
at home—through a home project
Celebration of special occasions

Child Care

Actual experience in the care of children is not a regular part of the Home Economics programme in schools. However, many pupils of the Intermediate grades assist in the care of children at home or in the neighborhood. By discussion and study in the classroom and by a few carefully-planned experiences with children, both in the classroom and outside, it is possible to help pupils understand children better and become more skilled in caring for them.

Experiences should be planned to help girls
learn the basic needs of children
appreciate differences among children
select food, clothing, games, toys, stories for the pre-school age child
assist children to develop good habits

Suggested activities:
Survey the class to discover the problems which pupils meet most frequently in car-

Money Management

The management and spending of money and the making of choices are the concern of all members of the family. As consumers pupils need help in learning how to spend so that they may get their money's worth in goods and personal satisfactions. At the same time they need to develop an understanding of the family's finances.

Income
sources of family income
sources of personal income

Spending
the budget
for the girl in the family
for the girl who expects to become a wage-earner
for the family
keeping a record of one's own spending

Shopping practices
ethics of shopping
standards for specific goods
informative labelling
bargains and sales
advertising

Home Care of the Sick

When there is sickness in the

ing for young children. These may be used as the basis for study and discussion and serve as a guide for planning additional experiences.

Discuss responsibilities of baby sitters to parents, responsibilities of parents to baby sitters

Plan and give a party for a kindergarten or a pre-school group

Prepare and serve a mid-morning meal to young children

Take a planned trip to a nursery school

home, girls should know how to give special assistance. Usually their responsibility is limited to helping care for the sick member of the family, but in emergencies they may be called upon to take more complete responsibility for the patient and for the family.

Responsibilities for home nursing
- routine for comfort
- administration of medicine, food, and other requirements
- rest and entertainment

Care of the room

First aid in emergencies

The Home

Option A

Option B

In Grades IX and X the teacher will endeavour to develop a growing appreciation of the importance of an attractive, convenient, well run home as a setting for happy family life. Experiences and activities selected will continue to be based on the girl's responsibilities at home and at school and on the family and community background.

A variety of home projects may be planned which will give satisfaction to both the pupils and their families. Emphasis should be placed on inexpensive ways of making the most of what you have.

Housekeeping I

Arrangement of furnishings and equipment for convenience, beauty, and comfort
- at school
- at home—with special reference to those areas where the pupil has some responsibility, e.g., her

Housekeeping II

Selection of furnishings and equipment based upon
- the pupils' present responsibilities
- their plans for the future

Renovation of furniture and furnishings

own room, rooms used by all family members

Experience in housekeeping skills
- in the Home Economics room
- at home

Cleaning tasks in the Home Economics room should be viewed as opportunities for developing good standards of housekeeping.

Improving storage space
- at school — in the Home Economics room, lockers, cloakrooms
- at home — in the girls' clothes cupboards, dresser drawers, bedrooms

Housekeeping as a cooperative enterprise
- responsiblities of different members of the family
- housework schedules — for daily, weekly, and seasonal tasks
- efficiency in work habits

Housekeeping equipment and supplies
- use, care, storage

Special cleaning problems not already taken, e.g., floors, draperies, blinds

Improving storage space
- special attention to kitchens, bathrooms, linen cupboards

Laundry I

Use of the washing machine

Experience in washing and ironing household linens, aprons, personal clothing

Brief study of soaps and detergents, bleaches, bluing, starch, and their uses

Removal of common stains from household linen

Laundry II

Selection of laundry equipment
- washing machines
- irons
- ironers

Laundering and care of special articles, e.g., woollen sweaters, men's shirts or women's tailored blouses, garments of rayon or wool

Household Sewing I

Care and repair of household linens

Making household accessories

Household Sewing II

Handicrafts related to the home

Safety

Why accidents occur in the home

Prevention of common accidents, e.g., falls, burns and scalds, electric shock, by

attention to safety practices
in the school

Food and Nutrition

Option A

Option B

The objectives in Grades IX and X are similar to those in Grades VII and VIII. Activities selected should have a practical application in the home and provide for the introduction of new learnings as well as progress in work already undertaken.

The Daily Meals I

Meal planning
- Canada's Food Rules
- palatability and attractiveness
- community and family customs
- use of seasonal and readily-available food
- economy
- use of available equipment
- work schedule

Food preparation

Suggested types of food from which a selection may be made:
- luncheons and suppers
  - salads
  - soups
  - sandwiches
  - casserole dishes
- dinners
  - less expensive cuts of meat or fish
  - vegetables
- breakfast
  - cereals
  - eggs, bacon
- desserts
  - fruit
  - milk
  - cereal

The Daily Meals II

Meal planning
- the nutritional needs of each member of the family
- money vs. food value
- saving time and energy
- special occasions

Food preparation

When pupils are taking the option for two years, the work of the second year may be made interesting by including:
- new foods of special interest to the girls
- variations of basic recipes
- improvement of skills and quality of finished product
- comparisons between home-made and partly-prepared products, standard and new methods
- use of labour-saving devices
- time-saving methods
- work plans
- meals for invalids, children

egg
gelatine
flour mixtures
tea biscuits
muffins
hot water pastry
cakes
cookies
beverages
confections

Food service and etiquette
good standards for family use
adapting methods of service to the occasion
deportment at the table

Food service and etiquette
See Option A

Housekeeping duties related to meals
arrangement and care of flowers
care and cleaning of kitchen and dining room
care of dishes, glassware, silver, kitchen utensils, linens
safety in the kitchen

Housekeeping duties related to meals
See Option A

Preservation of Food I

Canning—fruit, tomatoes
Storage

Preservation of Food II

Canning—jams, conserves, pickles
Storage
Freezing fruits and vegetables

Food Purchasing

Selection of commonly used food
Etiquette in purchasing
Costs of meals prepared
When possible pupils be given the responsibility for purchasing food

The Food Budget

Making the most of the family's money for food
Comparative cost studies — related to food prepared
Comparison of types of markets and stores

Nutrition I

Nutrition for the teen-age girl with special attention to breakfast and the noon meal

Nutrition II

Nutrition for the girl at school and at work
Health fads and superstitions

The effect of food on the body:
- the "Why" of Canada's Food Rules
- the food nutrients
  - carbohydrates
  - fats
  - proteins
  - more important minerals
  - more important vitamins
- selection of food at home, at school, in public places

Planning and analysis of balanced menus

Evaluation of popular meals for nutrition value

Food for children

Personal Appearance, Clothing, and Textiles

Option A **Option B**

Improving Personal Appearance

This will be developed in both years of the option.

The adolescent girl is keenly aware of her personal appearance.

Opportunities and experiences should be provided for girls to observe and practise correct methods of personal care.

- Qualities contributing to personal attractiveness
  - character traits
  - manners at home and in public
  - poise, friendliness
  - well-informed mind
  - appearance
  - health
- Essentials for an attractive appearance
  - good carriage
  - correct habits of personal hygiene
  - grooming
  - appropriate clothing for individual, occasion, and weather

Clothing Needs of the High School Girl

Planning—based on present wardrobe and needs
- purchasing ready-to-wear clothing
- deciding on garments to make

Clothing Needs of the Girl and Her Family

Planning
- girl's share in the family clothing budget
- suitable clothes for school or work

Developing judgment in buying

Selection
- suitability to wearer — use and cost, colour, texture, line, and design

garments
- style
- kind and quality of fabric
- workmanship
- value

Simple garments and personal or household articles which are in vogue and which meet the needs and the abilities of the pupils should be selected for construction. In the construction of garments or in household sewing, it is desirable to provide a sequence of problems involving progressive steps. The mastery of sewing skills will thus be developed by the repetition of common techniques and the gradual introduction of new ones.

In sewing or making garments, the following details should be considered:

- use of a pattern—choice, measurements, interpretation, alteration
- choice of material—use, suitability, cost
- preparation of material—shrinking, straightening
- application of fundamental construction processes and fitting
- experience in evaluation of finished article in terms of style, fit, workmanship
- use and care of tools used in sewing practices, including safety precautions

Suggested projects
- Simple garments made of cotton or firm rayon — blouses, skirts, dresses, or shorts
- Garments made of wool—skirts
- Personal accessories or gifts —aprons, belts, collars

Suggested projects
- Garments made of rayon or wool—skirts or dresses
- Garments made of cotton—children's clothing, undergarments, pyjamas, house or beach coats
- Personal or household accessories—for self, members of family, or for charitable purposes

Clothing Conservation I

Routine practices — hanging, brushing, sponging, pressing, airing, folding
Laundering for self or others
Repair for self or others

Clothing Conservation II

Special attention to woollen garments — spot removal, pressing, seasonal care
Washing knitted woollen garments

Renovation or remodelling of garments for self or family

Fabrics I

Identification, characteristics, and uses of common cotton materials used in clothing

Characteristics of rayon materials

Fabrics II

Identification, characteristics, and uses of common household cotton, linen, or wool.

Needlecrafts

Needlecrafts

Personal or household accessories or gifts

Embroidery, knitting, crocheting, weaving, smocking, or simple crafts which are in vogue and of interest to the pupils may be selected by the pupils for individual or class projects. These should involve new learnings and progression in technique.

Classroom Reference Books

Books marked x are for Grades IX and X; others are for Grades VII–X.

General

Baxter, et al: *Sharing Family Living.* Longmans.
Van Duzer et al: *The Girl's Daily Life.* Longmans.
Harris, Kauffman: *Young Folks at Home.* Copp Clark.
Home Economics Series. Copp Clark.
O'Donahoe: *Child Care and Development.*
Hawes: *Good Grooming.*
Craig: *A Guide to Consumer Buying.*
Deming: *Home Nursing.*
Price: *Living with the Family.*
Stone: *The Meaning of Nutrition.*
Evans: *The Story of Textiles.*

The Family

Baxter et al: *Our Home and Family.* Longmans.
Allen, Briggs: *Behave Yourself.* Longmans.
Stephenson, Millett: *How Do You Do and A Test on Manners.* Moyer.
xStephenson, Millett: *As Others Like You and A Test on Social Usage.* Moyer.
xDuvall, Lewis: *Family Living.* Macmillan.
McLean: *Good Manners.* Copp Clark.
Beery: *Manners Made Easy.* McGraw-Hill.
xBradbury, Amidon: *Learning to Care for Children.* Ryerson.

xSmart, Smart: *Living and Learning with Children.* Nelson.

xNational Department of Health and Welfare: *Up the Years From 1 to 6.* Department of Health, Toronto.

xFedder: *A Girl Grows Up.* McGraw-Hill.

xMcCowan: *A Boy Grows Up. McGraw-Hill.*

xShultz: *The Young Consumer.* Ryerson.

The Home

N. Y. Herald Tribune: *America's Housekeeping Book.* Saunders.

Balderston: *Housekeeping Handbook.* Longmans.

Weiland: *At Work in the Kitchen.* International Correspondence Schools Ltd., Montreal.

Tolg: *Homemaking Can Be Easy.* Ambassador.

xLewis: *It's Your Home.* Macmillan.

Food and Nutrition

N. Y. Herald Tribune: *Young America's Cook Book.* Saunders.

Pattinson: *Canadian Cook Book.* Ryerson.

Baxter, Justin, Rust: *Our Food.* Longmans.

Amidon et al: *Good Food and Nutrition for Young People and Their Families.* University of Toronto Press.

Food, Nurition and Home Management Manual. Department of Education, Victoria, British Columbia.

McLean: *Meal Planning and Table Service.* Copp Clark.

Clothing and Textiles

Carson: *How You Look and Dress.* McGraw-Hill.

Polkinghorne: *What the World Wears.* Clarke Irwin.

xJohnson, Newkirk: *The Textile Arts.* Macmillan.

xDenny: *Fabrics.* Longmans.

Potter: *Fibre to Fabric.* McGraw-Hill.

Baxter, Latzke: *Today's Clothing.* Longmans.

Iowa Home Economics Association: *Unit Method of Sewing.* Allen.

Baxter, Justin, Rust: *Our Clothing.* Longmans.

Handicrafts

Cox, Weismann: *Creative Hands.* General.

Johnson, Newkirk: *Needlecraft.* Clarke Irwin.

Institute for Hand Knitting, New York: *Knitting for Young America.* Robt. Simpson Co.

Teacher Reference

Stevenson: *Home and Family Life Education in Elementary Schools.* General.

Williamson, Lyle: *Homemaking Education in the High School.* Ryerson.
Hatcher, Andrews: *The Teaching of Homemaking.* Nelson.
Hughes: *Introductory Foods.* Macmillan.
Bogert: *Nutrition and Physical Fitness.* McAinsh.
Erwin: *Clothing for Moderns.* Macmillan.
Hurlock: *Child Growth and Development.* McGraw-Hill.

MEMORANDA

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